The hottest European markets ■ How U.S. companies can win

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FOR MANAGEMENT IN ELECTRONICS, COMPUTER, AND SYSTEMS COMPANIES —WORLDWIDE

DECEMBER 10, 1990

THE NEW EUROPE

Electronic Business

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COVER STORY/THE NEW EUROPE

38 The door opens to the New Europe

Big multinational electronics companies have been selling in Europe for years; now smaller companies are assessing their chances. For most of them, the question is not whether to explore the changing European marketplace, but how to find the fastest and safest route. This special issue is ELECTRONIC BUSINESS's guidebook to that marketplace

UPDATE

15 The door opens to the New Europe
Sun leads assault on PC turf; operating system rivals step up recruiting; Taiwan bets on software; PC downturn hits both ends of market; Canada's R&D in trouble; distributors study profitability; Arrow gains from Hamilton/Avnet fallout; the truth behind East-West management stereotypes

25 Economic Trends
Weakening dollar sends mixed signals for electronics; U.S. posts surplus in technology trade; communications market weakens

27 Companies to watch
Echelon Corp. links silicon brain centers; Expert Edge writes software to monitor manufacturing; Cache Computers designs boards for customized compatibles

31 Commentary
Cahners Economics VP Jim Haughey provides some straight talk about recession and the self-fulfilling prophecy

MARKET PERSPECTIVE

38 The door opens to the New Europe
Semiconductor manufacturing, telecommunications, data-processing, high-definition television: Europe is back in the world electronics-technology race in a very big way

44 Compromise is the key to lobbying in Brussels
The legislators of the European Community have created an environment that is distant in style as well as in miles from Washington, D.C.

50 A sluggish economy trims demand for electronics
The flow of manufacturing into the U.K. has created opportunity for growth, even though inflation and high interest rates have dimmed the immediate outlook

56 An irresistible market, but no place for the novice
After several years of restructuring, the French electronics industry is pushing strongly for leadership in Europe and the world

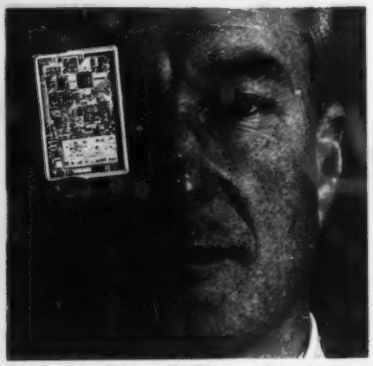
MARKET PERSPECTIVE

62 Politics create instability in Nordic market
U.S. companies may find a warm welcome in Scandinavia, although changes in the political climate are shaking up the region's electronics industry

66 Germany totes up cost of reunification
Germany is the largest electronics producer in Europe, and growth is brisk, but newcomers must cope with high costs and a members-only business environment

72 EC's unification drives telecom and computers
In the midst of a European slowdown, Italian electronics is expected to be healthy, especially in telecommunications and industrial automation

78 Searching for pay dirt east of the Elbe
One-third of the 1,500 largest U.S. companies plan to start doing business in Eastern Europe next year. Before you join them, weigh the many risks involved



PAGE 138 Tilman W. Kiess: "Our strategy is to move into new applications then follow up with technical support"

PAGE 105 The semiconductor slump is really over

PAGE 103 Picking the right European manager is a critical choice for U.S. companies

PAGE 44 Michael Carpentier is bullish on on the European Community's future in electronics

PAGE 92 Euroventures' Albert Kloezen: "We had to stimulate innovation or die of Eurosclerosis"

MANAGING RESOURCES

92 **The color of money isn't always green**
Whether it is finding start-up capital or balancing the books in more than one currency, money management in Europe is a challenge for most U.S. companies

103 **The new European manager**
Choosing the right person to head up your new European operation is a critical task. Here's how some U.S.-based companies handled the job

STRATEGIES: EUROPEAN CASE STUDIES

137 **Texas Instruments supplies Europe with homegrown chips**
Texas Instruments' goal of worldwide memory-chip production and Italy's strategy for industrial development find a meeting ground in the town of Avezzano

140 **A lucky twist of fate for Burr-Brown**
For some companies, overseas success is the result of long-range planning. For analog-circuit designer Burr-Brown Corp., it was "pure serendipity"

STRATEGIES: EUROPEAN CASE STUDIES

142 **Sun Microsystems aims for first place in Europe**
Sun Microsystems Inc. has spent the past six years successfully building its European operations, but the real test in Europe still lies ahead

148 **A clash of cultures at Tylan General**
Tylan General's story shows how an offshore acquisition can sour when U.S. executives ignore differences between the way business is done here and the way it is done overseas

154 **Finding the right distributor**
Small companies find setting up European distribution networks hard work. Location, size, and ability to handle technical products can mean the difference between success or failure

RESOURCES

161 **A guide to business in the New Europe**
An ELECTRONIC BUSINESS listing of important government agencies, industry groups, trade fairs, books and magazines

BOOK EXCERPT

175 **Japan buys Washington**
Japan's enormous economic leverage in Washington has its roots in the days of post-war occupation, writes Pat Choate in *Agents of Influence*

BUSINESS BAROMETER

199 **Distributors**
Semiconductor sales surprisingly strong

200 **Leading Indicator**

DEPARTMENTS

5 **Inside Business**

9 **Letters**

195 **My View**
The worst customer and the best

196 **Advertiser Index**

202 **Viewpoint**
Mixed signals from the European electronics industry

COMPANIES IN THIS ISSUE

188 **An index of the companies covered in this issue**

EDITORIAL STAFF

Publisher: Frank J. Burge

Editor: Jeffrey Bairstow

Managing Editors: H. Garrett DeYoung, Bruce C.P. Rayner

Senior Editors: Linda Stallmann (Financial), Rick Whiting, Barbara N. Berkman, Teri Sprackland

Associate Editor: Peter L. Burrows

Assistant Editors: Barbara Jorgensen, Xiong Xiaoge

Section Editor: John W. Parker

Copy Editor: Elaine M. Cummings

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Consulting Editors: Alberto Socolovsky, Allen Furst

Senior Production Editor: Karen J. Covey

Assistant Production Editor: Maura A. Baker

Editorial Assistant: Jean O'Brien

ART STAFF

Art Director: Michael Roach

Associate Art Director: Carla Aguilar Leeder

Staff Artist: Michele G. Kane

EDITORIAL OFFICES

Boston: Cahners Building
275 Washington Street, Newton, Mass. 02158
(617) 964-3030 Telex: 94 0573 CPC BSN
Fax: (617) 558-4327 MCI: EBBOS

San Jose, Calif.: Teri Sprackland
Sherman Building, 3031 Tisch Way, Suite 100,
San Jose, Calif. 95128 (408) 296-0868

Northwest: Dwight B. Davis
2924 Queen Anne Ave., N.
Seattle, Wash. 98109 (206) 284-5130

London: Barbara N. Berkman
27 Paul Street
London EC2A4JU England 011-44-71-628-7030
Fax: 011-44-71-628-5984

PRODUCTION

VP Production: Wayne Hulitzky

Director of Production/Manufacturing: John R. Sanders

Production Supervisor: Andrew A. Jantz

Production Manager: Betsy Harkins; (617) 964-3030

CIRCULATION

Circulation Manager: Ann Ward
44 Cook Street, Denver, Colo. 80206
(303) 388-4511

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The "New" Old World

The French author Restif de la Bretonne deserves a posthumous award for accurate forecasting. He predicted in 1792 that 200 years later, Europe would converge into a single-nation state—but everyone would still be arguing about it.

As 1992 approaches, the nations of Europe are indeed converging—economically and politically—and argument and confusion abound. A U.S.-based electronics company eager to do business in Europe today has to sort out a complex array of factors: capital sources, currency fluctuations, merger regulation, plant sites, government incentives, and distribution services. And that U.S. company has to think fast, because the European deadline for conversion to a single market is looming and the flat domestic economy is gnawing away at profit margins. Already, major U.S. electronics and computer companies are realizing 40% to 50% of their sales revenue abroad—with the fastest growth projected in Europe. Is it too late for your company to cash in? What are the risks, and what are the rewards?

Realizing that for many U.S. companies the Old World has become the New World, we dedicated this special issue of ELECTRONIC BUSINESS to Europe. We can't settle the arguments, but we can help clear up the confusion.

Frequent-flyer records were broken to produce this issue. Managing editor Garrett DeYoung, San Jose-based senior editor Teri Sprackland, and London bureau chief Barbara Berkman made a grand tour of the European electronics industry. In France, they found a village in Provence being transformed from vacation paradise to high-tech mecca. In Italy, they found an ambitious $700 million government incentives program that helped Texas Instruments produce DRAMs deep in the heart of Mezzogiorno. They found drawbacks: High costs and local brand loyalty partly offset the strength of Germany's electronics market and massive infrastructure problems mar the promise of doing business in countries east of the Elbe.

On the European beat: Senior editors Barbara Berkman (right) and Teri Sprackland, and managing editor Garrett DeYoung

No tour of the New Europe would be complete without a stop in its capital, Brussels—home to the European Commission. As contributing editor Linda Bernier reports, winning hearts and minds in Brussels requires skills far different from those employed by most industry lobbyists in Washington. "In the United States, you fight and you win," says one EC official. "Here, you discuss and you compromise"—just one of many lessons U.S. executives need to learn as they move to explore and colonize the new Old World.

JOHN PARKER, section editor

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BPA ABP

WORKSTATIONS

Sun leads assault on high-end of PC marketplace

SUN MICROSYSTEMS Inc., the market leader in workstation sales, is leading the charge to take away the high-end of the personal computer market. "We want to be the platform of choice for anyone who is doing traditional CAD and high-end engineering analysis," says marketing manager Jeffrey Arnst. "But it is not just CAD—it's project management, it's accounting, it's business, it's word processing. We would like to own the marketplace for the desktop for the professional—whether lawyer, doctor, or engineer."

This audacious assault has familiar overtones. "Sun is trying to position itself in the workstation market the way IBM did in the PC market," says Harmon Cadis, president of ICT Technologies, a Saginaw, Calif.-based reseller of PC- and workstation-based CAD solutions. "They realize they aren't going to get it all, but they would be fine if they could wrap up 20% to 30%."

Cornerstones of the strategy include liberal licensing of Sun's proprietary SPARC reduced instruction set computer (RISC) technology to help grow the market and make the platform a general standard. The company has licensed 7 semiconductor companies to develop and sell SPARC chips commercially and has granted to at least 6 others the right to use SPARC chips in their own systems. All told, the company estimates that at least 36 companies have developed SPARC-based computers, from laptops to supercomputers. One licensee, LSI Logic Corp., announced that 10 PC-clone makers are developing such systems using their SparKit chipset.

And like Big Blue, Sun is aggressively signing up third-party vendors. While the workstation vendors have traditionally limited themselves to direct sales due to the complexity of the product and the ability to achieve high margins, Sun has rewritten the rules in this respect. "We haven't been able to reach all the customers we want to reach through direct sales," says Bob McInroy, manager of mechanical market development. "We have low-cost products now, so we have to find new ways to distribute them. We have maxed out our direct-sales channels."

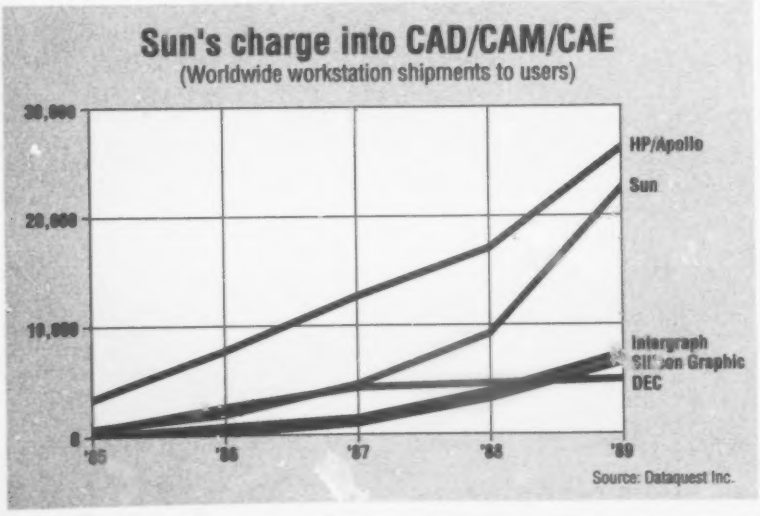
As of early autumn, the company had signed up a network of VARs, dealers, retail franchise operations, distributors, original equipment manufacturers, and systems integrators. The hottest-selling box from the start has been the SparcStation IPC, which retails at $5,000. Dealers sales are twice what they were last year, moving along at a clip of 2,500 per month, says Arnst, "and those are the kinds of volumes that software developers are happy to get 1% of."

Indeed, Sun's success in attracting applications developers to port to the SPARC platform may be the company's most impressive initiative to date. From a base of only 200 last year, over 2,000 applications now run on Sun, says Arnst. That includes applications from over half of the third-party developers for AutoDesk Inc., the Sausalito, Calif., company that dominates the PC-based CAD/CAM/CAE business with market share exceeding 70% by most counts.

Skeptics say that vanquishing the PC is too big a job for any one company. But in the brash style of its CEO, Scott McNealy, Sun does not cower from taking on the IBM and IBM-compatible PC market, which has an estimated installed base of up to 50 million units. Instead, the company seems dedicated to a strategy of "intentional commoditization": Cut out the competition's profit margins by turning your proprietary technology into the industry standard, and set up a suite of applications and reseller channels to ensure high volume of sales.

"Customer loyalty has to do with price more than platform," says McInroy. "We have already got them beat there, and we are focused on the key applications. We may not have thousands and thousands of programs, but most people only use two or three anyway. Just look at [Apple Computer Inc.'s] Macintosh."

PETER BURROWS

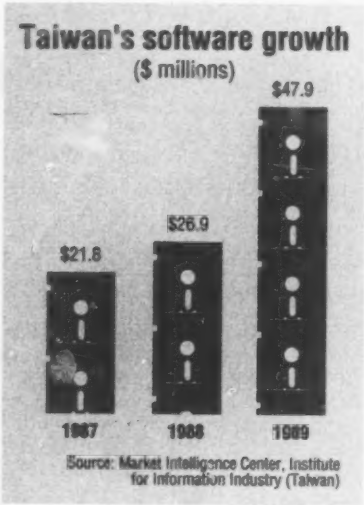


TAIWAN

Taiwan bets on software industry

U.S. ELECTRONICS companies may benefit from two large recent appropriations by the Taiwanese government to develop the island country's electro-optical and software industries.

The government's appropriations include $270 million for a four-year electro-optical development project and $220 million for establishing a 50-acre software-industrial zone. The



software-industrial zone will be situated in Nankang, northeast of capital city Taipei. According to government sources, a U.S. company has been contracted to draft a plan for the zone, which is to be released soon. The government would not release any details on the planned electro-optical project.

Yang Shih-chien, director of Taiwan's Industrial Development Bureau, says the facilities planned for the Nankang software zone will accommodate about 5,000 software engineers and generate annual revenue of $400 million.

The software-industrial zone, expected to be operating by 1992, will be rented or sold at prices lower than market value to encourage participation, says Yang.

With that new project, Taiwan, who for years has thrived on the manufacture of PC clones, is now attempting to shift the emphasis of its industry away from hardware. Its PC industry reached a total-output level of $723 million in 1989, but sales of PC software registered only $48 million, according to a report by the Market Intelligence Center at the Institute for Information Industry, a Taiwanese government-sponsored research institution.

During a recent visit to Boston, K. T. Lee, senior adviser to the president, said Taiwan should strengthen its software development in order to maintain the competitiveness of its computer industry. Lee was Taiwan's minister of economics through the 1950s and is considered chief architect of Taiwan's booming economy.

The move is much needed. Since 1988, Taiwan's computer industry has been suffering from a 15% annual wage growth. That, along with the island's double-digit inflation, has kept down PC makers' profit margins, which average only about 3%, according to Ta-lin Hsu, president of Hambrecht & Quist Taiwan, a Taipei-based high-tech venture fund.

"In order to maintain profitability, the Taiwan computer companies are forced to upgrade their products," says Hsu. "Software development is certainly one way to do it."

According to Hsu, Microsoft Corp.'s Windows graphical software environment is the hottest technology in Taiwan. Microsoft has recently signed a contract with Taiwan's Institute for Information Industry to run a training program on Windows 3.0, the latest version.

XIONG XIAOGE

SOFTWARE

Operating system rivals step up recruiting

NOW THAT THE OPEN Software Foundation's OSF/1 operating system has been released, OSF and rival Unix International (UI) appear to be stepping up their efforts to attract converts to their respective causes.

"We believe we have already achieved a momentum, as far as OSF/1 is concerned," OSF president David Tory said in an October press conference marking the operating system's formal debut. Not surprisingly, the OSF/1 unveiling included endorsements from OSF founders Digital Equipment Corp., Hewlett-Packard Co., IBM, Groupe Bull, Hitachi Ltd., and Siemens AG. But OSF also trumpeted support from hardware and software vendors like Intel Corp., Informix Software Inc., Intergraph Corp., and Encore Computer Corp. OSF's membership roster now numbers over 200.

One week later at the Unix Expo trade show, UI held its own press conference to tout the broad acceptance of Unix System V Release 4.0 which has been available for a year. Noting that there are now 750 products based on System V, Release 4.0 from 320 vendors, UI president and chief executive Peter Cunningham said: "The market growth is clearly with Unix System V. It is real, and products are shipping." UI's membership now totals over 180 and the press conference included endorsements from Dell Computer Corp., Fujitsu Ltd., Lotus Development Corp., and NCR Corp. NCR is also a member of OSF, but the Dayton, Ohio, company favors Unix System V over OSF/1, said Van Aggelakos, NCR's multi-user products division vice president.

But all this may not benefit computer users, concludes a recent report from Forrester Research Inc., a Cambridge, Mass., market research firm. The report says that standards organizations like UI and OSF are dominated by competing vendors more concerned with protecting their installed bases rather than delivering true standards that would allow users to easily build and operate multi-vendor computer networks. The report predicts that future standards will result from broad-market acceptance of existing products, rather than being promulgated by organizations like UI and OSF.

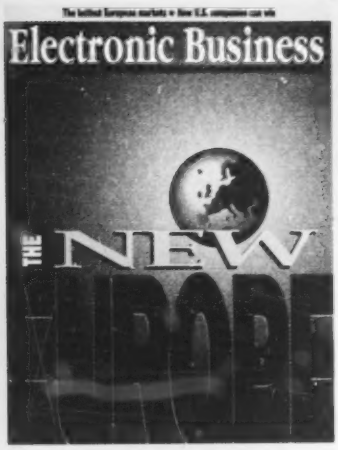
RICK WHITING

PERSONAL COMPUTERS

PC downturn hits both ends of market

THERE IS NO ESCAPE for manufacturers of personal computers, whether they sell at the high end or the low end of the U.S. market. For low-end manufacturers, plummeting September sales added a sour note to an already lackluster year. At the high end, the boom appears to have peaked, with prices tending downward. Analysts at Prudential-Bache Securities have gone so far as to downgrade the recommendation on their entire PC group from "hold" to "sell."

PC unit sales in the United States dropped 25% in September, after averaging only 4% growth for the first eight months of 1990, says a recent Pru-Bache report. "With unit volumes falling and prices being cut 15% to 20% by every major vendor, we are becoming more convinced that the PC market is headed for a repeat



During the 1980s Europe virtually abdicated its leadership in world electronics to the United States and Japan. Today, U.S. managers are on notice that Europe is a force to be reckoned with...

MARKET PERSPECTIVES

38 **The door opens to the New Europe**
Once written off as a stodgy has-been, Europe's electronics industry is back in a big way

44 **Compromise is the key to lobbying in Brussels**
In this genteel "capital of Europe," you don't slug it out–you talk, talk, and talk some more

50 **A sluggish economy trims demand for electronics**
For managers with plenty of patience, better days are coming for the troubled U.K.

56 **An irresistible market, but no place for the novice**
French nationalism and cultural barriers could be hard on small U.S. companies

62 **Politics create instability in Nordic market**
The thorny issue of EC membership casts a shadow on the industry's future

66 **Germany totes up cost of unification**
A booming electronics marketplace is tempered by high wages and rising interest rates

72 **EC's unification drives telecom and computers**
Integrated systems and services are crucial to Italy's success in the '90s

78 **Searching for pay dirt east of the Elbe**
Future markets remain a mystery, but Western companies are lining up anyway

MANAGING RESOURCES

92 **The color of money isn't always green**
The financial manager's guide to finding capital in the Europe of the 1990s

103 **In search of the new European manager**
The hunt is on for execs who know both your company and your European markets

STRATEGIES

137 **Texas Instruments supplies Europe with homegrown chips**
How the Dallas giant pocketed a cool $700 million for setting up shop in Italy

140 **A lucky twist of fate for Burr-Brown**
The analog-circuit company sort of stumbled into Europe but came up smelling like a rose

142 **Sun Microsystems aims for first place in Europe**
The company aims to become the world's top supplier of workstations within the next 18 months

148 **A clash of cultures at Tylan General**
Buying your way into Europe? Make sure your new subsidiaries share your corporate vision

154 **Finding the right distributor**
Hooking up with a compatible partner takes a lot more than hotel-lobby interviews

The door opens to the New Europe

Competition is on the rise as Europe approaches the Single Market, but even small U.S. players find opportunity

STAFF REPORT

Legend has it that when Columbus set sail for the New World in 1492, his charts of the mid-Atlantic carried an elaborately scripted warning: "Here there be dragons."

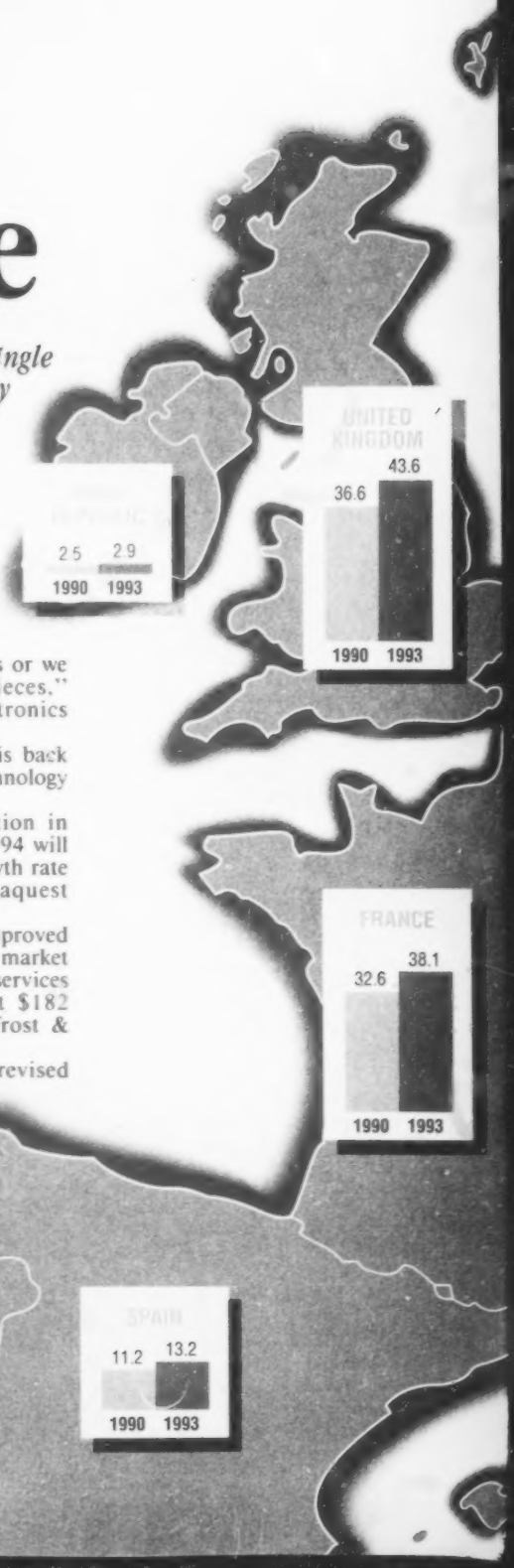
For thousands of U.S. companies struggling to identify business opportunities in the Europe of the 1990s, dragons aplenty still lurk in those depths. One might argue that the region known as Europe has been rocked by more grassroots political, sociological, and economic changes during the past decade than during any other period in recent memory. From Britain in the west to the Urals in the east, the result is a spirit of self-confidence that hasn't been seen in 50 years. Just below the surface, however, one senses the single condition most feared and abhorred by business—uncertainty.

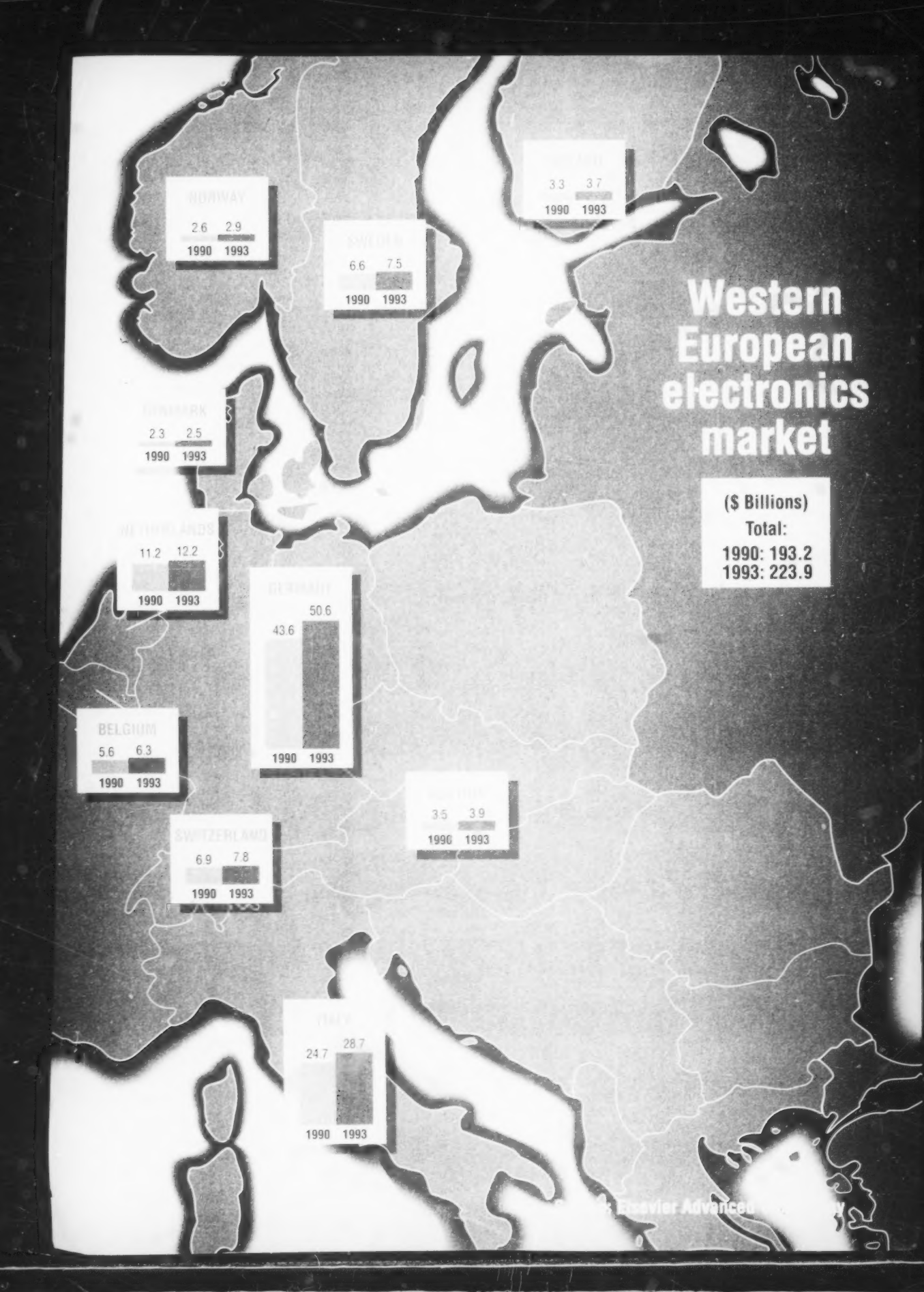
Consider that just three months ago, Germany was a politically and economically divided nation. Barely a year ago, Eastern Europe was essentially a collection of Third-World economies ruled from Moscow, itself now in the throes of the most startling upheaval since 1917. And less than a decade ago, Western Europe was gripped by a systemic economic and technological malaise—*Eurosclerosis*, some wags called it—that forced some of the world's most powerful electronics companies to virtually abdicate leadership in world markets to the United States and Japan.

Since then, Western Europe has seized a commanding position in the world electronics market. Spurred by their governments into collaboration with one-time competitors, electronics companies that were once written off as stodgy dinosaurs are now as lean, mean, and aggressive as any Silicon Valley upstart. "We knew we had to change the way we did things or we would become museum pieces," reflects one European electronics executive.

The result is that Europe is back in the world electronics technology race in a very big way:

- Semiconductor consumption in Europe between 1989 and 1994 will sizzle along at an annual growth rate of 17.9%, estimates Dataquest Europe;
- With sharp demand for improved communications systems, the market for telecom equipment and services in Western Europe will hit $182 billion by 1994, predicts Frost & Sullivan;
- Borderless banking and revised financial laws after 1992 (when the final rules will be put in place to create a single marketplace from the 12 member nations that now



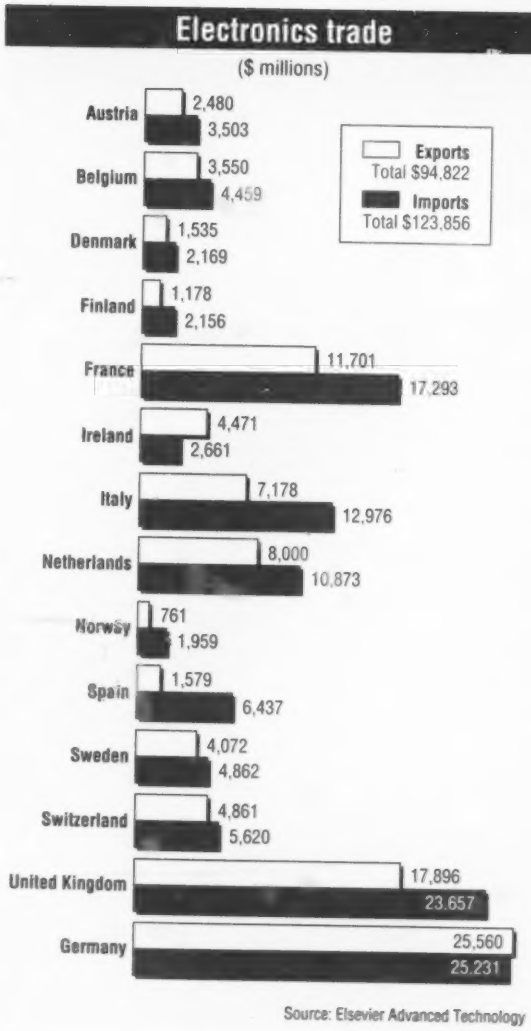

Western European electronics market
($ Billions)
Total:
1990: 193.2
1993: 223.9
NORWAY
2.6 2.9
1990 1993
3.3 3.7
1990 1993
6.6 7.5
1990 1993
2.3 2.5
1990 1993
11.2 12.2
1990 1993
50.6
43.6
1990 1993
BELGIUM
5.6 6.3
1990 1993
3.5 3.9
1990 1993
6.9 7.8
1990 1993
24.7 28.7
1990 1993

make up the European Community, or EC) are boosting demand for data processing and computer power. The European market for customer service and support alone will grow at an annual rate of 11.4%, hitting $38 billion by 1994, estimates The Ledgeway Group in Boston.

In addition, Europe outpaces the United States in the adoption of certain emerging technologies of the 1990s. By 1995, for example, Europe will have introduced hardware and broadcasting in high-definition television. Several commercial projects already have begun to implement the integrated services digital network (ISDN) technology in Britain, Belgium, France, The Netherlands, and Germany. A centerpiece of digital cellular technology—the pan-European Digital Cellular System—will be in place by 1992. Also slated for 1992 is a working cross-border beeping system, called the European Radio Messaging System.

How are executives to interpret and respond to what could well be the most extensive, wrenching, and confusing changes in the European landscape in recent history? How can any corporate planner formulate sound long-term business decisions in view of the fact that many of those changes still defy description and analysis and will themselves lead to even more changes?

Many managers, it seems, choose to simply ignore the whole idea of 1992. For them, Europe is either an incomprehensible puzzle or a far-away region with little or no bearing on their businesses. "I see very little understanding or interest about Europe among small and midsize U.S. companies," says F. J. O'Rourke, managing director of the Eurostrategies Institute Inc. in Boston. "They are only vaguely aware that something is happening over there."



Source: Elsevier Advanced Technology

O'Rourke's perceptions are reinforced by a recent survey of 3,000 CEOs of non-*Fortune* 500 companies, conducted by Access Opinions Ltd. in London. In that survey, 48% of the respondents admitted being confused about the implications of 1992 for their companies.

A merger of 12 nations

There is plenty to be confused about. Aside from the 1,500 or so formal specific rules and regulations that will lead up to the 1992 unification, in fact, no one really knows what the New Europe will look like—or even sound like. "The only thing I know is that the language of Europe will be broken English," says consultant Charlie Thayer of European Marketing in Chevenoz, France.

The principle, though, is simple enough: On January 1, 1993, the EC will become a unified trading bloc of some 325 million people, much as the United States is a single trading bloc; the new improved economies of scale and the elimination of multiple standards will boost the EC's gross domestic product by about 5%, according to a 1988 study. The grab bag of 12 separate sets of national statutes—covering such diverse matters as life-insurance policies, worker protection, product advertising, highway safety regulations, and television programming—will be replaced by a single set of national laws. For non-European electronics companies, the unification will also mean that any product or system that meets specifications in one of the 12 countries will automatically meet the specs of the other 11.

But in most outward respects, Europe won't change at all. Popular perceptions aside, unification will not suddenly introduce a single European currency; in fact, there is no such provision in the 1992 agreement. It most definitely will not end the cultural, political, and sociological differences that have divided Europe for centuries. The fundamental gulfs between France and Britain, or between Germany and Italy, are every bit as difficult to bridge as those between a Wall Street stockbroker and an Iowa farmhand.

The message is that non-European companies marketing or expanding in Europe must carefully study the differences in purchasing criteria from country to country—even from region to region in the same country. "Just try and sell in France with a technical sheet that is not in French,"

says one source. And personal computers, widely used by many top European managers, tend to be shunned by high-ranking German executives. "Having a PC suggests you are not important enough to have a secretary," says Albrecht F. Doehler, executive director of Siemens AG's data and information group in Munich. Even local work customs can alter a company's strategy. NEC had to abandon its expansion plans in Ireland when the "bicycle radius" limited their plant to 200 employees—the number of workers who lived close enough to bike to work.

The moral is that "American suppliers must adapt in terms of product offering," advises Vittorio Levi, executive vice president of Nokia Data Systems AB in Stockholm. "U.S. companies believe the dealer and value-added resellers are the same in each country, or that all the banks are the same. That isn't true. Everything will come together in the next decade, but it will be a long process."

Another source of confusion, if not anxiety, among American managers is the perception that the New Europe will be a highly protected market. To be sure, market unification was intended to benefit Europeans rather than Americans or Japanese. Nor can one deny that inherent cultural differences may in fact be tacitly protectionist. German electronics companies are unlikely takeover targets for foreigners, for example, since families or friendly institutions hold 56% of all shares in Germany's listed companies.

But most Europeans, perhaps taking a tip from the fallout of the bitter trade wars between Japan and the United States, claim to have committed themselves to the creation of a genuinely open unified market. "It is political suicide to admit to protectionism here," says Dean Strausl of Eurasem, a semiconductor test and assembly facility in Nijmegan, The Netherlands. "It is like admitting to adultery in Connecticut."

Indeed, Europe has already seen the erosion of government support for certain highly protected industries (although a few noncompetitive sectors might enjoy some national support for a few years yet). The European Commission, abandoning its earlier protectionist posture, has recently considered cutting import duties on semiconductors from 14% to 9.2% and removing the 5% duty on computers. In Germany, the legal standards for beer purity—reportedly the oldest single law in the world—have been revised because the Commission ruled them anticompetitive. Also in Germany, the close, century-old relationship between Siemens and the postal service failed to head off a multibillion-dollar contract last year between the service and a consortium of non-German companies.

While large multinational electronics companies such as IBM and Digital Equipment have been selling in Europe for years, it is the smaller companies that now are researching strategies of their own. For most, the question is not whether or not to take part in the changing European marketplace, but to figure out the most efficient and least risky route.

Fortunately, many of the obstacles that may have restricted such moves just a decade ago have fallen. The transformation of Europe's industrial base, the implementation of the Single Market of 1992, and the invasion of European markets by large multinationals have smoothed the bumps for smaller companies trying to stake out their own territories. "After years of takeovers and joint ventures, the multinationals have made the first round of structural moves in Europe," says Rod Dowler, chairman of the high-technology practice of KPMG Peat Marwick McLintock in London. "This has changed the pattern of the market for the next-tier players, so the market now is more competitive for midsize companies." As a result, Europe is no longer closed to outsiders—not to Japan's new jobs and technologies, and especially not to the Americans' high energy levels, innovative marketing skills, and similar political and cultural roots.

By most accounts, the simplest and perhaps least complicated way to get started in Europe is to find an experienced distributor or agent. In this case, the U.S. Department of Commerce is one of several invaluable resources, matching small U.S. companies to compatible European customers and distributors for a modest fee.

But most experts argue against attempts to serve the European market entirely from the United States. "Anyone trying to compete in Europe from outside of Europe is at a definite disadvantage," says Eurasem's Strausl. Companies with the necessary resources are urged to set up or acquire a plant as a foothold then gradually increase the plant's design, support, and research and development capabilities. "That has been Japan's strategy in Europe, and Japan isn't known for making mistakes about the future," says Eurostrategies' O'Rourke.

Another approach is to identify and develop one of the hundreds of unattended niche markets that are appearing in Europe as large computer and telecommunications companies nail down contracts and joint ventures with their European counterparts.

Osicom Technologies Inc., for example, has eschewed conventional large markets within the EC to seek out shares of such developing European markets as Greece, Portugal, and Scandinavia. Rather than go head-to-head in Germany with huge German competitors, says marketing manager Michael Connolly, "it makes more sense to go into a small market, such as Greece, and get instant success." The Rockaway, N.J., company designs, manufactures, and distributes its personal computer systems and peripherals from Cardiff, Wales.

No one discounts the economic risks and hardships entailed in moving a business into the New Europe. But thousands of U.S. companies of all sizes will testify that the perils of exploration are far less intimidating than the penalties of global isolation. "No geographical region can be self-sufficient in everything," says Jens Uwe Fuhrmann, managing director of a leading German trade association in Munich. "We need full collaboration all over the world." □

Twelve nations, one market

Founded in 1957 by the Treaty of Rome, the European Community now includes the following nations:

- Belgium
- Denmark
- France
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- The Netherlands
- Portugal
- Spain
- United Kingdom

Compromise is the key to lobbying in Brussels

Media blitzes and campaign cash may get results in Washington, but U.S. companies need more genteel ways in Europe's capital

BY LINDA BERNIER

Two years ago Jack J. Valenti, president of the Motion Picture Association of America, stormed into the so-called capital of Europe in an outrage. European Community legislators were meeting in Brussels to study a directive requiring that the majority of programs used by European broadcasters be made within the EC. The provision would slash U.S. film and TV exports to Europe—which amount to $700 million a year—by half.

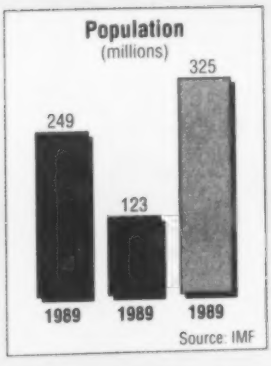
Valenti did what any powerful industry representative would do in Washington: He gave some of the local bigwigs a piece of his mind, publicly berating EC lawmakers for creating a protectionist "Fortress Europe" and threatening to call for international action against restrictive trade policies.

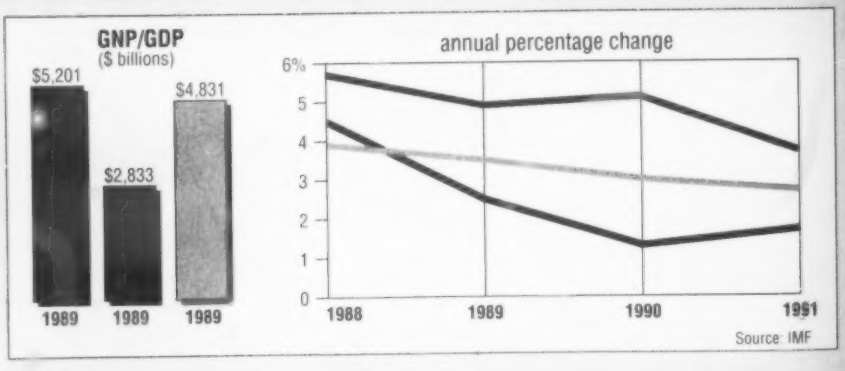
All that bluster might have played well on Capitol Hill, but it flopped in Brussels. Valenti made his points too loudly, too late, and—according to some critics—to the wrong people. The directive was adopted, although the obligation to progressively achieve majority European programming was not legally binding. "Valenti actually helped bring about that directive by scaring some European producers out of their minds," says one official of the European Commission, the EC's executive body. In this case, he explains, the big-stick approach merely convinced some hesitant European filmmakers and government officials of the need to protect their industry from U.S. domination.

The tale may be an extreme example, but it does highlight the differences in both substance and style between U.S. and EC lobbying. Indeed, lobbying is somewhat of a dirty word in Brussels, partly because of the EC's diffuse and complicated decision-making process. In the United States, the separation of legislative and executive powers is relatively distinct; interest groups can pressure elected officials with the lure of votes and campaign support. But that isn't the case within the EC.

"In Europe, determining where the power lies is a complex exercise," says Symon Visser, IBM's director of external programs/Europe. Representatives of the 12 sovereign states that make up the European Council have the power to adopt legislation. But legislation is proposed, drafted, and administered by the Commission, a permanent body of European civil servants that owes allegiance to no single member state and is

The Big Three: Vital statistics for the U.S., EC, and Japan





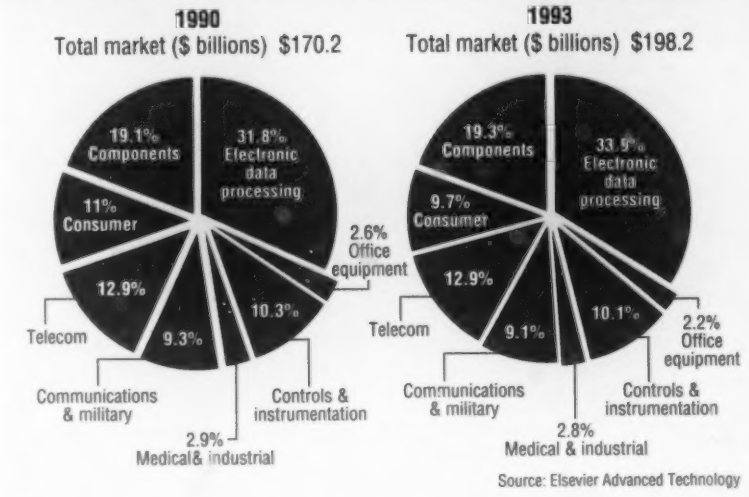
headed by 17 government-appointed commissioners.

The 518 members of the European Parliament, elected directly by citizens of the member states for five-year terms, have limited legislative powers. Although the EP must be consulted and can delay and amend legislation, the Commission does not have to accept its amendments. In fact, the Council can overturn a Commission proposal after a second reading by the EP only if it votes to do so unanimously.

Democratic accountability—which is currently an elusive concept for EC institutions—is likely to get a boost this month, however, when the EC's conference in Rome on institutional reform considers proposals to increase the powers of the EP. The proposed changes would empower the EP to elect the Commission president, oust individual commissioners, initiate legislation, and send amendments directly to the Council for acceptance or rejection, allowing them to bypass Commission intervention.

This kind of democratization would increase the power of European lobbyists and consultants, who have been flocking to Brussels since the adoption of the Single European Act in 1986. Companies that are afraid of being locked out of the EC market are increasingly turning to these specialists in order to take advantage of the opportunities deregulation will bring, and to keep up with the sheer volume of legislation—some 282 legislative proposals altogether, 60% of which have already been adopted by the Council.

The EC electronics market



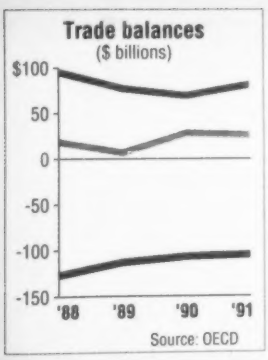
Source: Elsevier Advanced Technology

These measures have wide-ranging impacts on the electronics industry. A 1987 EC report on telecommunications, for example, led to directives that opened up the terminal equipment, services, public-procurement, and receiving-antenna markets and established the European Telecommunications Standards Institute and the open network provision directive. A 1988 paper on copyrights produced directives on the legal protection of computer programs and databases. There also are directives providing for pan-European mobile telephones, the development of an information services market, and high-definition TV. Other decisions address the financial, corporate, trade, and social fields, as well as the Commission-sponsored research and development programs that directly affect electronics.

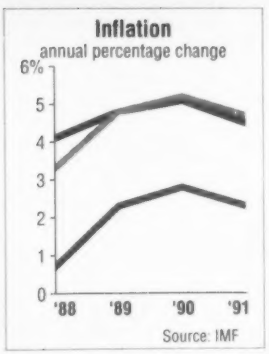
The Commission is planning, for example, to link vital public-sector computer systems in such fields as police, customs, and treasury information. Called the European Nervous System, it is seen as an essential element in administering the Single Market program.

The EC's interest in promoting high-tech investments is evident in the Commission's Eurotech Capital and Seed Capital programs founded in 1988. Eurotech Capital is expected

United States Japan European Community



Source: OECD



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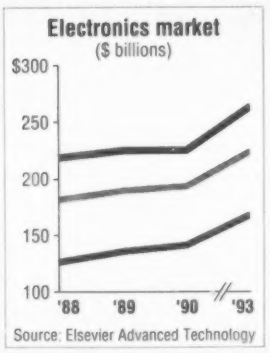

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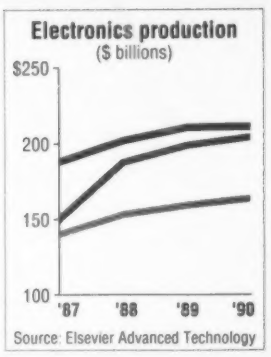


Source: Elsevier Advanced Technology

to invest in five companies a year. The Seed Capital program provides financial investments to private seed investors for an advance payment for operating expenses. In addition, the Strategic Programme of Innovation and Technology Transfer (Sprint) and the European Strategic Programme for Research in Information Technology (Esprit) bolster European development efforts.

Today, faced with increasing competition from Japan, a depressed European electronics industry, and an imminent open and liberalized single market, Commission officials are conducting the most intensive evaluation in years on how to revive this ailing sector. Europe's deficit in electronics trade is $6.5 billion with the United States and a whopping $15.4 billion with Japan.

European Commissioner Michel Carpentier calls for an industrial policy of cooperation in a liberal market

The situation is worrisome but by no means desperate, says Michel Carpentier, the veteran Eurocrat who heads directorate-general XIII (the body responsible for telecommunications, information industries, and innovation). Carpentier predicts that Europe will find its own road between America's spirit of venture capitalism and Japan's tight industrial-policy system. "I have nothing against industrial policy if that means allowing companies to cooperate and develop in the context of a liberal market," he says. European industry, he adds, is technically equal and even superior to industries abroad in such fields as software and computer-integrated manufacturing. Further, European demand is growing more rapidly than demand for electronics in the United States, and the percentage of that market supplied by European companies is increasing, at 39% after slipping to 35% in 1985, says Carpentier.

To keep up with all the legislative and policy changes, as well as contribute to them, over a dozen top U.S. electronics companies have established or beefed up special EC affairs staff. They include IBM, AT&T, Digital Equipment Corp., Unisys Corp., and Intel Corp. Many have also joined European industry associations, such as Eurobit (European Association of Manufacturers of Business Machines and Information Technology Industry), the European Electronic Components Manufacturers Association, or the European Telecommunications and Professional Electronics Industry. Some participate in the highly regarded EC Committee of the American Chamber of Commerce. And some are pushing the American Electronics Association to open an office during the first quarter of 1991.

Some EC officials concede that U.S. companies can teach Europe a thing or two about lobbying

EC officials say U.S. companies still have a lot to learn about how to exert influence in Brussels. The methods used there are more subtle and less confrontational than in Washington. Many Eurocrats are, or will soon become, true European idealists fully dedicated to the EC's supranational goal. And since most receive salaries commensurate to those in industry, junkets and other attractions offered by lobbyists have little lure.

Foreign attitude

In many European countries, industrial policy is almost a given rather than an embattled concept. The U.S. antitrust attitude is foreign to Europeans, and Europeans and their governments are somewhat resentful of the Commission's newly acquired power to rule whether acquisitions or mergers are anticompetitive.

Americans "don't really understand the EC machinery," says one EC official. "In the United States you fight and you win. Here you discuss and you compromise." He recalls the gaffe that IBM made about 10 years ago by attacking a Commission antitrust action against the company. "The attack was politically a bad move because they couldn't negotiate anymore."

Still, some EC officials concede that U.S. companies can teach Europe a thing or two about lobbying. Long years of experience have made Americans savvy about how to organize and present views in ways that are digestible to understaffed and overworked civil servants. U.S., in addition to Japanese, companies are astute about playing one European country against another, especially in cases where big corporate investment, employment, and tax revenue makes government officials more sensitive to their points of view. European companies, long used to their positions as "national champions," often don't see the need for aggressive lobbying tactics.

For example, during the initial hearings on the software protection directive, not a single company brought up the now hotly contested issues of reverse engineering or interoperability. "Where was the European lobby—Siemens, Philips, and ICL—then?" according to one EC official. "We were waiting to hear from them." □

A sluggish economy trims demand for electronics

But there are plenty of longer-term prospects for success if companies can ride out Britain's grim economic climate

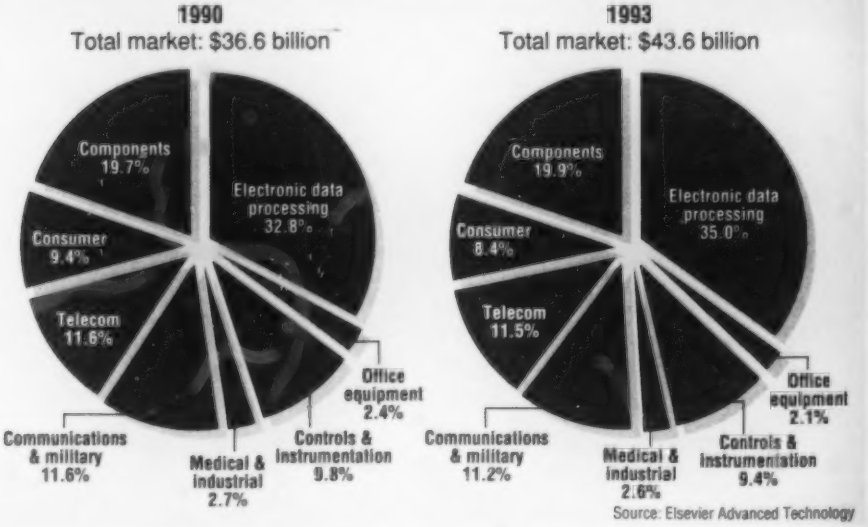
BY BARBARA N. BERKMAN

Double-digit inflation and high interest rates have dimmed the immediate outlook for semiconductors, passive components, and value-added computer-related products in the United Kingdom. Although the telecommunications sector looks relatively solid for now, overall growth in electronics during the next year or so is estimated to come in at about 5.4%, predicts Peter Sachs, director general of the Electronics and Business Equipment Association in London. That is a significant drop from the historical annual growth rate of 8%.

Especially hard hit are computer companies that sell to London's financial institutions. Los Angeles-based Teradata Corp., for example, attributes its third-quarter loss partly to significantly slower U.K. sales of its mainframe-class database computers. The moratorium on defense-budget increases have added to the industry's losses. The Ministry of Defense spends about one-third of its $14 billion budget on electronics equipment or systems, estimates analyst Sash Tusa of Robert Flemings Securities Ltd. in London.

So far, though, the downturn hasn't deterred U.S. electronics companies from using Britain to launch their European operations. The British electronics market, after all, is still the second-largest in Europe, after Germany, with 1990 sales estimated at $37 bil-

United Kingdom's electronics market



Source: Elsevier Advanced Technology

lion. And for English-speaking newcomers to Europe, the shared language and common business practices make the U.K. an easier place to do business than, say, France or Germany.

Steady investment by U.S. and Japanese companies over the past few years has significantly beefed up the nation's production base. The flow of manufacturing into the U.K. has already created niches of opportunity for growth, even in a recession. Plessey Semiconductors Ltd. in Swindon, England, for example, struck a deal worth $20 million with Conner Peripherals Inc.'s operation in Scotland to pursue the growth niche of mass-storage disk drives. "We have grown from zero to $50 million in that business in 18 months," says Ray Gleason, Plessey's worldwide marketing manager. Plessey earns 33% of its sales in Britain. While the company reports a slowdown of new design wins, sales are somewhat protected because one-half of its business is in semicustom chips, mostly for ongoing projects.

Still, most electronics companies based in Britain are being pinched. A July survey by the Confederation of British Industry (CBI) in London revealed that 75% of electronics goods manufacturers reported below-normal orders and expected the trend to last through October. "Business is difficult and will likely remain so," says Ted Merrette, managing director of AB Electronic Products Group, a Welsh components maker with 1989 sales of $468 million.

The British electronics market is not without its bright spots. Some 95% of the electronics industry consists of U.K.-based multinational giants that post sales of more than $180 million, export mostly to the rest of Europe, and so rely less on domestic revenue. And because of the falling value of the dollar, U.S. companies that distribute, rather than manufacture, in Britain are also doing relatively well. "Britain is a hotbed of activity for us," says Bruce Earl Goguen, president of Goguen Industries Inc. in Liverpool, N.Y.

For most companies, success in Britain is simply a matter of waiting out the current economic downturn. In defense electronics, for example, "every major defense program is going to suffer in the short term," says Stuart Exell, managing director of BBN Systems & Technologies based in Edinburgh, Scotland. According to another source, some 2,500 defense-electronics research jobs were axed in Britain during 1990. Still, the segment features a few relatively secure niches, such as electronics equipment for upgrading weapon systems, surveillance and communications electronics, and simulation equipment for training military personnel.

A similar situation prevails in telecommunications. British Telecommunications plc, the top domestic player, is now undergoing a cost-cutting retrenchment by slashing 10,000 jobs and reducing inventory levels. By 1994, however, Britain's market for telecom services will grow from $19.9 billion in 1990 to $24.7 billion, according to Frost & Sullivan in London. During the same period, the telecom-equipment market, now at $7 billion, will hit $9.3 billion. Meanwhile, shipments of LAN nodes will grow from 556,365 units this year to 896,340 by 1995, according to International Data Corp. in London.

Britain's semiconductor consumption will grow from $2.7 billion in 1990 to $6.1 billion by 1994, predicts Dataquest Europe. Indro Mukerjee, marketing manager for Hitachi Europe Ltd., estimates the U.K. mass market for chips is the largest in Europe, with the top 100 customers representing about 40% of the market. That leaves chip companies and distributors catering to a mass of small accounts.

Britain is also home to a strong components industry, with a positive European Community trade balance for capacitors, discrete components, printed circuit boards, and resistors. By 1993, the British market for those components will reach $6.9 billion, according to the National Development Council's Electronic Components group in London.

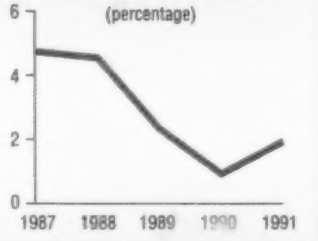
Another important economic factor is Britain's entry in October into the EC's European Monetary System, a move that will cut the nation's high inflation, interest rates, and wages—factors that directly impact U.S. electronics companies that sell or manufacture in Britain. When Chancellor of the Exchequer John Major pushed Britain into the system, he took a big step toward monetary unity and a single currency for the entire EC. While Britain's participation in the EMS won't make much short-term difference, it will eventually cut the cost of capital and stabilize the British pound against European currencies. "It will create a better investment climate in the next three to four years," says Sudhir Junankar, head of economic trends at the CBI. □

United Kingdom

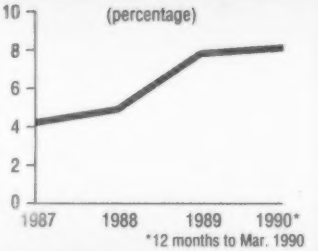
Land area: (sq km)	244,493
Population: (1989)	57.2 million
Civilian employment: (1989)	28.1 million
GDP per capita: (1989)	$14,580
Number of electronics companies:	360
Total electronics employment:	541,000

Source: British Information Service

United Kingdom GDP growth

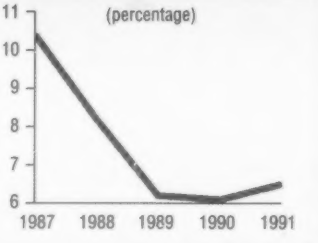


Consumer price index



*12 months to Mar. 1990

Unemployment



Source: OECD

An irresistible market, but no place for the novice

At once cosmopolitan and provincial, France is a rewarding European base for companies that invest the time and resources

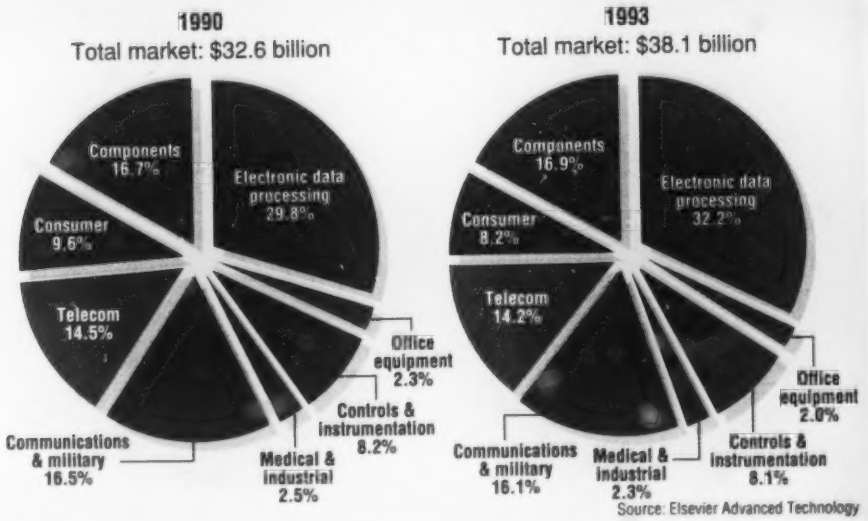
BY TERI SPRACKLAND

France is both alluring and intimidating to U.S. electronics companies. A $32.6 billion market that enjoys a strong lead in telecommunications, a rebound in consumer electronics, and a strong showing in computers, France provides a home away from home to many multinationals. Yet national champions still gain much government support, and institutional and language barriers remain strong.

As electronics companies set up shop in France, they should look to the example of those already in place and be prepared to invest years in the process while becoming part of the local landscape. Unless there is an overwhelming synergy, France is likely to prove a poor first choice for smaller U.S. electronics companies. "France is not the spot for first-timers," warns Ronald Blunden, senior vice president of Thomson Consumer Electronics. Noting the broad disagreement between France and other European Community members on the subject of foreign investment, he notes that the barriers to invest are much lower in Britain, Ireland, and Spain.

Assuming a good market, however, the choice may be inevitable. Many U.S. computer companies would not have posted recent profits without the aid of their European subsidiaries, most of which are active in France. U.S. electronics companies already employ more than 60,000 people in

France's electronics market



Source: Elsevier Advanced Technology

France, according to the French Industrial Development Agency. The nation has attracted most of the big names among the long-established multinationals. IBM France is the fifth-largest company in France and some say the most profitable. Hewlett-Packard recently decided to move its global PC headquarters to Grenoble. Other U.S.-based companies in France include General Instruments, GTE, AMP, AVX, Vishay, Sun Microsystems, and Texas Instruments.

Having closely watched the battles between U.S. and Japanese multinationals, the French most fear a Japanese invasion of Europe that could overwhelm their local industries. The acquisition by Fujitsu Ltd. of the British computer company ICL plc has become a *cause celebre*. "The concept of a national computer industry may cease to exist in Britain because of this acquisition, and it is important that France avoids finding itself in the same situation," says Jacques Bouyer, president of Groupement des Industries Electroniques (GIEL), a leading French electronics industry association.

After several years of restructuring, the French electronics industry is pushing strongly for leadership in Europe and the world. French electronics exports totalled more than $24 billion in 1989, up nearly 10% from the year before.

France has digitized about 70% of its telecommunications network, with ISDN technology in some areas. Telecommunications owes much of its strength to Minitel. Initially funded by the government with the idea of putting electronic telephone directory services in the home, the Minitel videotext service eventually paid its way only when sexually explicit *messagerie rose* were allowed. This type of messaging allows anonymous user groups to communicate and has been linked with prostitution. Concerns have been raised over access to the technology by minors. Nevertheless, the Minitel project helped make France a world leader in videotext services.

In consumer products, the glory of France is being pinned to the development of a standard for high-definition television (HDTV—or TVHD, as it is called in France). Here, Thomson Consumer Electronics is becoming a global contender by capturing 22% of the U.S. television and 15% of the U.S. VCR market with its purchase of RCA from General Electric. HDTV standards issues are being addressed through an EC program called Eureka 95.

In computers, the U.S. giants have been leading the parade in France for some time. In fact, the multinational computer companies have found their European subsidiaries' sales to be outdistancing U.S. growth. France ranked just behind Germany in 1989 in the acquisition of business computers, with PC sales at 770,000 units in 1989, according to market researcher International Data Corp., France. A 10% growth rate is predicted through the end of this year.

The use of PCs is filtering down to smaller business, and the top three U.S. companies—IBM, Apple Computer Inc., and Compaq Computer Corp.—control more than one-third of the market, according to Dataquest. Apple has taken market share away from IBM for several years. In fact, Apple honchos brought European operations chief Michael Spindler back to home base to see if he can work the same magic on the U.S. market.

Paris's reputation as the only place to do business in France is fading. Some time ago, the French government forced the relocation of several key professional schools to other regions, a move that has had the desired effect of encouraging regional growth. A particular beneficiary has been the Alpes-Maritimes region in the south of France. This year, high-technology businesses finally surpassed tourism as the mainstay of local industry.

The lode star has been Sophia Antipolis, located between Nice and Cannes. Built on the firm refusal to allow messy manufacturing plants, the technology village has scored an enviable record of attracting R&D projects. Like Silicon Valley, the area features a glorious climate and astronomical housing costs. With design engineers in short supply throughout Europe, some companies find it dangerous to let engineers visit this "city of wisdom," since they may insist on relocation.

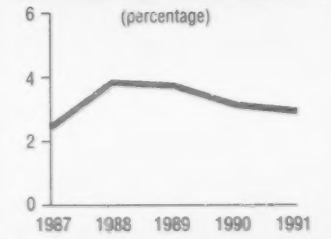
Despite an inherited aptitude for building monolithic government-supported industries, France is allowing entrepreneurs to experiment with new industries. Engineers are striking out on their own—forming small businesses and looking for niches and partnerships. However, the size of the market continues to attract outsiders. Willing or not, France slowly is abandoning the ramparts of economic nationalism. □

France

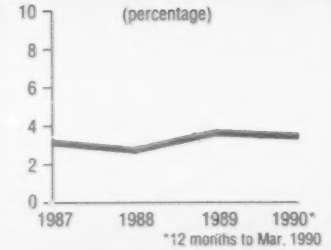
Land area: (sq km)	543,998
Population: (1990)	56.5 million
Civilian employment: (1990)	21.5 million
GDP per capita: (1990)	$17,000
Number of electronics companies:	800
Total electronics employment:	250,216

Source: French Embassy

France GDP growth

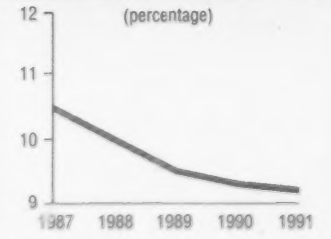


Consumer price index



*12 months to Mar. 1990

Unemployment



Source: OECD

Politics create instability in Nordic market

Ericsson, other giants threaten to leave if Scandinavian nations remain outside the European Community

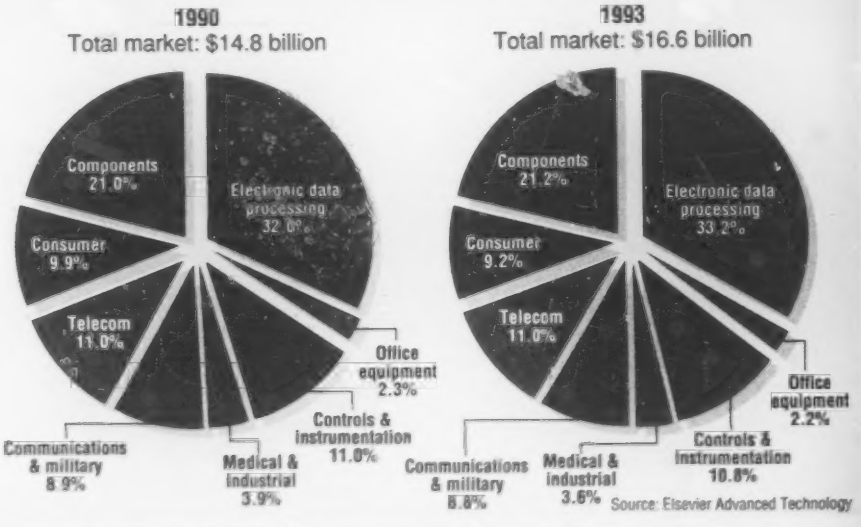
BY BARBARA N. BERMAN

At first glance, Scandinavia might be seen as a near-perfect entry into the European electronics market. Although the market is relatively remote and only about one-tenth as large as Germany's, the four nations—Sweden, Finland, Norway, and Denmark—are far more amenable than many other European nations to outside competitors. Unlike Germany or France, for instance, the region has never been politically constrained to favor Scandinavian electronics suppliers over foreign ones.

But the picture is changing rapidly because of political and economic alliances that could have profound implications for U.S. companies. Faced with sluggish economic growth, an annual inflation rate of more than 11%, and eroding competitiveness, some Scandinavian countries—particularly Sweden, Finland, and Norway—are seeking to improve their economic fortunes by swapping their membership in the European Free Trade Association for places in the European Community. Sweden and fellow EFTA member Austria have already asked to join the EC, and Norway is expected to follow suit.

As long as Scandinavia remains outside the EC, U.S. companies can benefit from the fact that products sold in EFTA nations can be priced higher than those sold within the price-harmonized EC. As Scandinavian com-

Scandinavia's electronics market



Source: Elsevier Advanced Technology

panies move their production and research facilities into the EC, however, it is likely that Scandinavia's domestic electronics demand will dwindle.

Regardless of the outcome of the EC membership issue, the Scandinavian electronics industry seems headed for a shakeup. According to some analysts, Sweden's EC membership will force the country to abandon its full-employment policy and heavy tax laws. But if Sweden does not join the EC (or at least overhaul its tax policy), companies like $5.5 billion Telefon AB L.M. Ericsson may simply relocate along with other electronics giants, says Ericsson's chief executive Lars Ramqvist.

Until the matter has been permanently resolved, smaller U.S. electronics companies should consider keeping their options open by selling in Scandinavia without investing in an actual sales or production presence. Ericsson's New York office, for example, serves as a middleman for smaller U.S. electronics companies that have no exporting experience, says Johan Siberg, an Ericsson director. "That means you don't have to manufacture in Europe [to sell to Ericsson]." Ericsson already sources enough supplies from the EC to meet European origin requirements.

In many ways, the Nordic electronics market is similar to Germany's. Engineers from both regions have a reputation for demanding more technical information and better performance than many of their European counterparts.

Scandinavia is attractive to U.S. companies for several reasons. For one, the region's giant electronics companies, such as Ericsson, Nokia, and Norsk Data, are accustomed to dealing outside their domestic markets. Another attraction is the region's heavy concentration of electronics consumers and producers; Sweden, for example, is home to such major companies as Saab-Scania and AB Volvo (auto electronics) and AB Electrolux, the white-goods manufacturer. As for Ericsson, the company is riding a wave of growth in telecommunications with its public switches, mobile voice and data systems, and defense radio communications.

Another advantage for U.S. companies is that, although Sweden, Finland, and Norway are outside the EC, their technical standards are consistent with EC requirements. While midsize U.S. companies usually look first to the heart of the EC instead of Scandinavia, the latter market has fewer informal entry barriers than many EC countries, such as language or cultural bias, according to Michael Connolly, marketing manager of the U.S. company Osicom Technologies (UK) Ltd. in Cardiff, Wales.

"There is no reason for [non-Scandinavians] to be bashful," explains Lars Stalberg, vice president of corporate markets for Ericsson in Stockholm. "We spend a lot of time understanding how the French, Italian, Germans, and British think." Moreover, he says, Americans are essentially exempt from the political and cultural antagonisms that so often define business relationships in Europe.

But U.S. companies shouldn't be overwhelmed by the warm welcome. While demand for sophisticated electronics is high, the market still must mature in some technologies. Unix, for example, is far less accepted in Scandinavia than in the United States. "In the commercial market, Unix is still finding its place in Scandinavia," says Stratton Sclavos, acting general manager of Mips Computer Systems Ltd. in Marlow, England. Mips recently selected a small distributor for the region after learning just how limited the Scandinavian Unix market really was.

Smaller companies are relatively rare in Sweden, partly because of the sluggish economic growth and partly because the country's corporate tax rules favor large, capital-intensive industries. The few small companies that do exist are unlikely takeover candidates for U.S. companies interested in securing an instant foothold in Scandinavia, since local laws discourage takeovers by limiting foreign ownership of corporate equity.

Finally, Scandinavia is an expensive region to set up direct-sales operations: Sweden's liberal social policies and worker benefits, for example, can add 40% to salaries. Selling costs also are high. In the United States, for example, an ad in the computer-industry press could reach as many as 700,000 readers. In Sweden, "one ad reaches only about 20,000 people, so the cost per lead is much higher here," warns Tommy Palmqvist, managing director of Dell Computer Corp. in Sweden. □

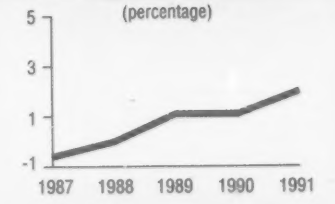
Scandinavia

Land area: (sq km)	1,153,800
Population: (1989)	22.8 million
Civilian employment: (1989)	11.6 million
GDP per capita: (1989)	$21,403
Number of electronics companies:	775
Total electronics employment:	185,500

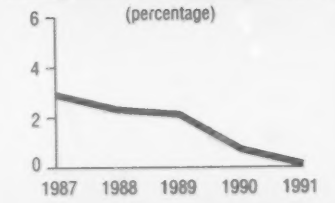
Source: ELECTRONIC BUSINESS estimates

GDP growth

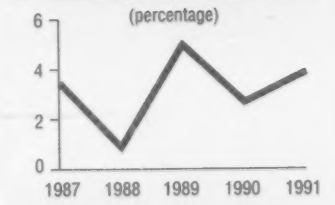
Denmark



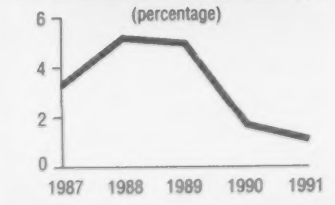
Sweden



Norway



Finland



Source: OECD

Germany totes up cost of reunification

Along with some of Europe's highest electronics growth rates, the newly reunified nation also has heavy costs and a "members-only" business environment

BY H. GARRETT DeYOUNG

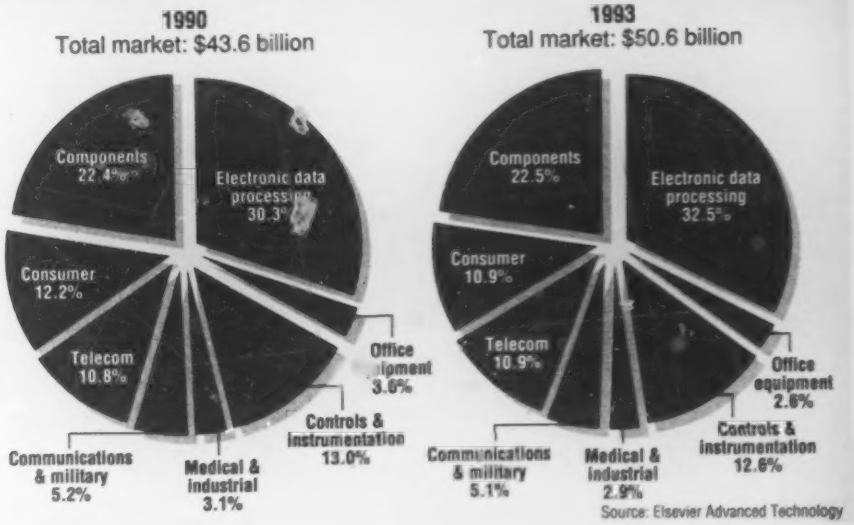
Few nations have so totally baffled the outsider as twentieth-century Germany. By turns sentimental and bellicose, solicitous and arrogant, the nation somehow seems torn between its desire to be a good neighbor in the prosperous New Europe and what one historian described as an inborn inclination to rule.

That complexity reaches into the nation's powerful industrial sector. Boasting a 1989 roster of some 1,700 electronics and electrical companies, Germany is the largest electronics producer in Europe and the third largest in the world, according to the Brussels Consulting Group in Palo Alto. For the unwary U.S. company, however, it may also be a minefield.

One reason is the German economy. With the nation's booming exports, an inflation rate of only 3%, and a personal-savings rate of 13% (two to three times higher than in the United States), German electronics seem all but immune to the slowdown now plaguing other European countries.

But there is still the matter of the massive bills incurred by the October reunification with the former East Germany. Emotional and historical impacts aside, few industry sources expect an immediate payoff from the absorption of what is essentially a Third-World nation. "It will be at least 10 years before living standards in the eastern part

Germany's electronics market



Source: Elsevier Advanced Technology

of the country reach even 75% of those in the west," says Karl Leitenberger, deputy director of economic policies at Siemens AG in Munich. Moreover, the government's repeated trips to the capital markets to finance that move have bumped up interest rates more than 2% during the past year, notes Martin Rommel, assistant vice president at Stuttgart-based Landesgirokasse, a top German bank. Other analysts predict a jump in personal and corporate taxes—now among the highest in Europe—after this month's general elections.

Nor is Germany a cheap place to do business, especially when compared with such depressed regions as Northern Ireland. The nation is famous for its superb educational system, ample supply of skilled workers, and high productivity. At the same time, though, high wages and generous worker benefits make Germany's production costs "several percentage points too high by world standards," says Adolf Ahnefeld, secretary to the board of managers at Robert Bosch GmbH in Gerlingen-Schillerhohe.

U.S. companies hoping to crack the German market on their own should also plan for a long dry spell. For all the talk of the 1992 Single Market, Germany supremely illustrates the highly localized nature of buying and selling in Europe. While Germany is a very stable market with a great deal of customer loyalty, in contrast to France or Italy, it maintains a "members-only" environment in which newcomers are held at arm's length for years, says Nick Walker, the British-born director of European marketing at Force Computer in Neubiberg. "It could take five years of talking with German buyers before you start doing business," adds Hans DeHaan, European business administration manager at VLSI Technology GmbH in Munich.

But even those caveats are unlikely to dissuade U.S. companies from climbing aboard the German electronics steamroller. One reason is the brisk annual GDP growth rate for the newly united nation, between 3% and 4% annually this year and next, says industry consultant Helga Burgstahler in Stuttgart.

Telecommunications offers the fastest electronics growth in Germany during the next few years, partly because of the anticipated demands of the Single Market, partly because of expansion opportunities in Eastern Europe, and partly because of system privatization. The number of private networks in Germany is expected to grow 10% per year, says Wolfgang Flachmann, deputy director of private communications systems and networks at Siemens AG in Munich.

Perhaps the biggest telecom growth rates are reserved for cellular and mobile phones. Europe now runs about three years behind the United States in the development of that market, according to Hartmut Reuter of Bosch's corporate planning and controlling unit. And while it is now impossible to make a cross-border cellular phone call in Europe, the post-1992 Single Market will allow a cellular phone user anywhere within the European Community to call any other EC telephone.

The German electronics market is dominated by a handful of powerful companies such as Siemens, Bosch, Telefunken Electronic GmbH, and Grundig AG. But sources agree that there is plenty of room for newcomers—especially from the technology-rich United States. "Ten years ago, we thought that each European country would be strong in at least one electronics field," says Alfred Prommer of Prommer Consultants in Munich. "It now seems that was an artificial strategy. We should be doing all we can to get U.S. companies here to contribute to our overall technology."

To some observers, moreover, American companies are favored simply because they are American. The European business community is still largely fractured into "German" companies, "French" companies, "British" companies, and so on—associations encumbered with cultural and political rivalries. "An American company won't be seen that way," says Christoph Horstmann, executive director of Siemens's semiconductor group.

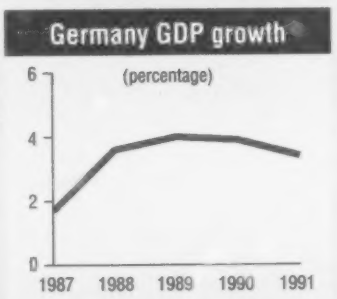
Still, the United States seems like a long way off to most Europeans, says Walker of Force Computer. "You can't just send over two or three people and find an office." A far better strategy is to find a local partner—a qualified sales agent, for example, or another company with a complementary technology.

For all its intimidating size and power, Germany promises a rich payback—at least for companies that do their homework, master the local ground rules, dig in for the long haul, and, most importantly, pay close attention to product quality and reliability. "If you have a good product," says consultant Burgstahler, "you will have a good market." □

Germany

Land area: (sq km)	356,780
Population: (1989)	78.4 million
Civilian employment: (1989)	32 million
GDP per capita: (1989)	$16,200
Number of electronics companies:	1,500
Total electronics employment:	411,047

Source: German Chamber of Commerce, Elsevier



Source: OECD

ITALY

EC's unification drives telecom and computers

Fighting off a slowdown, Italy strives to catch up with its neighbors, and with the United States, in the service sector

BY MARSHA JOHNSTON

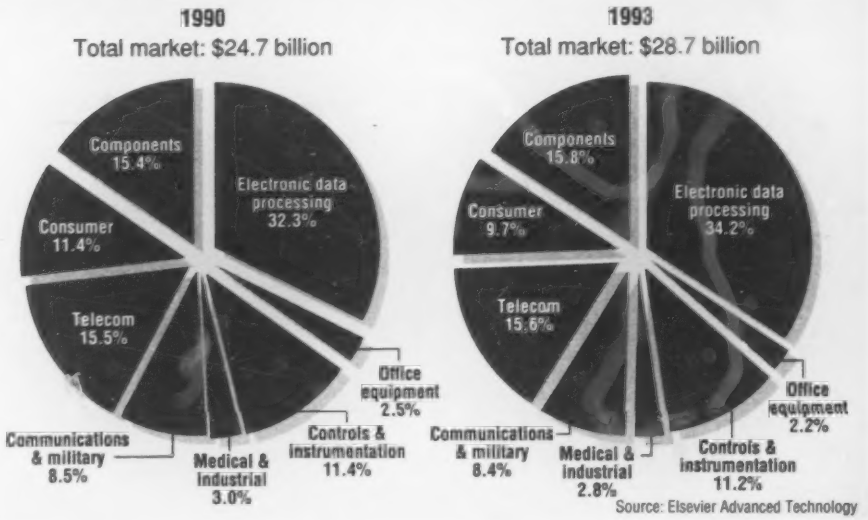
By all indications, Italy is unlikely to escape the economic slowdown that is now spreading throughout Europe in general and the electronics marketplace in particular. Still, the Italian electronics sector is expected to post a relatively healthy performance during the next year or so, especially in telecommunications and industrial automation.

Even so, U.S. companies seeking a foothold in Italy will need time, money, and plenty of patience. As in so many European countries, it is imperative to first study the regional culture and its implications for business, preferably by establishing relationships with those already familiar with the product and the market. "You must know people, otherwise you can't get through," says Elio F.C. Sasso, electronics industry analyst for the commercial section of the U.S. Embassy in Rome.

Once those relationships are established, U.S. telecom companies can expect ample payback for their efforts. "Telecom is increasing the most [in electronics]," says Marina de Mico, general manager for Milan-based distributor Ing. Giuseppe de Mico SpA. A recent report by the U.S. Embassy put Italian telecom growth at an annual rate of 14.1% in real terms at least through 1993; by then, demand is estimated to reach $8.72 million, from about $5.86 million in 1990.

Italtel (Italy's national manufacturer of

Italy's electronics market



Source: Elsevier Advanced Technology

telecom equipment), for example, expects to spend $88 million on semiconductors alone in 1991 versus this year's estimated $76 million. Meanwhile, Italy's domestic telecommunications agency (the Societa Italiana per l'Esercizio delle Telecomunicazioni p.a., or SIP) expects to invest $31 million between 1990 and 1993.

Value-added telecom services, such as LANs and ISDN, will also be in high demand in Italy. This segment of the electronics market hit $550 million in 1989, adds Sasso, and should grow threefold during the next two to three years. The reason, he says: Telecom services in Italy lag well behind those in the rest of Europe and are far less advanced than in the United States. Phone bills are not itemized, for example, and no credit is given for wrong numbers.

In recent months, the Italian government has discussed privatizing SIP and opening the network to another licensee (although no such decisions have yet been made). In a recent interview, Oscar Mammi, minister of post and telecommunications, declined to predict the complete liberalization of the mobile phone sector but did note that the sector will become more competitive. Among potential competitors to SIP are two private consortia—one that includes Ing. C. Olivetti & Co. and another that includes a top executive from the Fiat-Berlusconi group.

Indeed, the opening of the telecommunications sector is inevitable if Italy is to succeed in a unified Europe. "With European unification," says Bruno Lamborghini, Olivetti's vice president of corporate strategic analysis and planning, "you can see the possibility of reinventing [and improving] public services by using information and communications technology for integrated systems and services."

On another front, the Italian computer market was hit by last year's generally lower demand across Europe. Although Olivetti reported a 5.8% increase in turnover and pretax profits of $50.75 million for the first half of 1990, the company has been fighting the industrywide trend of eroding margins, personnel reductions, and other cost-containment measures. Last year, for example, PC shipments grew at the rate of 31.5%. The rate dropped to 23% during the first quarter of 1990 and to 16.7% during the second quarter. The third-quarter figure could come in at 10% or less, says Lamborghini.

But longer-range prospects are encouraging. This year's Italian market consumed about 432,000 PCs and workstations, 44,000 minicomputers, and 900 mainframes, estimates Teknibank, a Milan-based market research firm. By 1993, Teknibank expects annual consumption to reach 582,000 PCs and workstations (a net three-year increase of 35%), 47,000 minis (7%), and 1,082 mainframes (20%).

"Olivetti is growing in PCs both in terms of units and in terms of revenue," says Mauro Righetti, senior vice president of procurement at Olivetti Systems and Networks. Accordingly, Righetti also predicts huge growth in Olivetti's consumption of components, such as 4-megabit DRAMs. The question is whether that growth will favorably affect supplier revenue, given the 40% lower prices in 1-Mb DRAMs between 1989 and 1990.

As for other components, Teknibank expects the market for connectors—including coaxial, PCB, rack-and-panel, and fiber-optic connectors—to grow about 10.5% per year for the next three years from this year's estimated $250 million. Computer and office automation represents the largest market for connectors (with 32%); public and private telecom accounts for 25% and 9%, respectively. Industrial electronics accounts for 11%, leaving 21% divided among other sectors.

Italian electronics could still be something of a pitfall for the inexperienced U.S. company. One reason is that wages in Italy run 2% to 3% higher than the European Community average, according to Confindustria, an Italian industry trade group, and have recently been rising by 7% to 10% annually.

Given the overall costs of electronics production, however, wages by themselves represent only a minor obstacle, according to Luigi Segu, external purchasing manager for Digital Equipment Corp. in Milan. A more serious problem is that excess supply in Italy makes savvy marketing even more critical to the newcomer. "It is best not to go direct," says Sasso. "You need Italian managers, even if the operation is run with U.S. capital, unless [the product] is unique. In that case you don't need anyone."

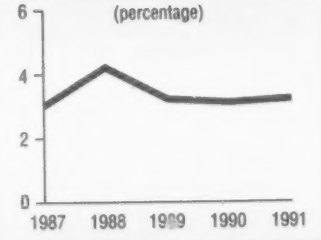
De Mico agrees with the need for insider knowledge. "In the United States, business is based more on price and delivery," he says. "But the Italian customer concentrates mostly on the relationship." □

Italy

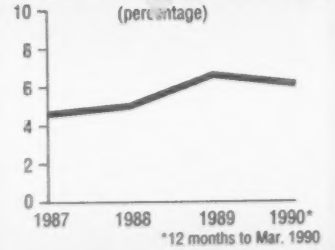
Land area: (sq km)	301,225
Population: (1989)	57.5 million
Civilian employment: (1988)	21.1 million
GDP per capita: (1990)	$18,260
Number of electronics companies:	628
Total electronics employment:	196,520

Source: Italian Trade Commission

Italy GDP growth

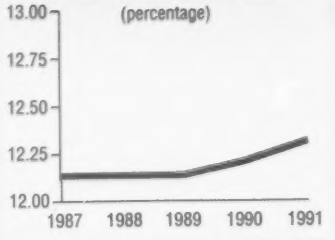


Consumer price index



*12 months to Mar. 1990

Unemployment



Source: OECD

Searching for paydirt east of the Elbe

The complications of setting up business in the former Eastern bloc allow little margin for error

BY H. GARRETT DeYOUNG

You needn't be a brain surgeon to come up with several very good reasons to stay clear of the Eastern European electronics marketplace, at least for the next several years.

Following the collapse of what was once the Communist bloc, most of the national economies in the region are in shambles. Inflation in Poland hit 1,000% at one point, notes one consulting firm, although it recently settled down to a mere 25%. Environmental pollution in many of the countries—parts of Czechoslovakia, for example—ranks among the worst anywhere. And even the most basic precepts of Western business are all but unknown east of the Elbe.

Still, more than 3,300 joint ventures had been registered in Eastern Europe by the end of 1989, according to the United Nations' Economic Commission for Europe in Geneva. As of early this year, Western companies had signed more than 740 joint ventures in Hungary and more than 1,400 in Poland, according to Harry Sello, president of Harry Sello and Associates in Menlo Park, Calif. While almost all of the Western partners are European companies (mostly German), Opinion Research Corp. in Princeton, N.J., notes that one-third of the United States' 1,500 largest companies plan to start doing business in Eastern Europe during 1991. One big reason for U.S. expansion, says Sello, is the "potential consumer and governmental market of 136 million people with over 40 years of pent-up demands and unfulfilled expectations."

If that sounds a little vague, it is because no one really knows very much about the size or the production capacities of the Eastern European electronics market. The region has no independent market-research firms such as Dataquest or Frost & Sullivan. Data that does exist has long been jealously hoarded by various ministries or manipulated by party officials. The result is that while one source claims that consumer electronics in the region could reach $38 billion by the end of the decade, one senses that an estimate half as high—or twice as high—would be just as credible.

Most analysts agree that, as in other parts of Europe, telecommunications ranks as the high-growth electronics segment during the 1990s. The existing system is widely described as dilapidated, outdated, and hopelessly inadequate, the deliberate result, by one account, of a policy by which the old Communist regimes defused counterrevolution by keeping the populace essentially

U.S. electronics exports to Eastern Europe

1989 total: $120.7 million

Source: EIA

Bulgaria

Land area: (sq km)	110,912
Population: (1988)	9 million
GDP: ($ billions, 1988)	$50.7
GDP per capita:	$5,633
Growth of GDP: (1986-88)	1.9

Source: OECD, World Almanac

incommunicado. Only about 13% of the Soviet population now own telephones, versus an average of 50% in most Western nations. Upgrading telecom in the Soviet Union and the rest of Eastern Europe will cost some $350 billion over the next decade, according one research group.

Sello notes that of the new Eastern European markets, three nations in particular—Hungary, Poland, and Czechoslovakia—represent the most significant business prospects for U.S. companies because of their aggressive moves toward Western alliances and developing market economies.

Czechoslovakia

Land area: (sq km)	127,876
Population: (1988)	1.57 million
GDP: ($ billions, 1988)	$118.6
GDP per capita:	$7,603
Growth of GDP: (1986-88)	1.5

Source: OECD, World Almanac

Hungary is probably the most attractive Eastern European nation for Western investment. The country is relatively liberal in its dealings with the West and spends about 2.5% of its gross domestic product on research, compared with 2.8% in Japan. Technical skills are on a par with those in the West, says a spokesman for Siemens's Budapest subsidiary.

The best prospects in Hungary probably await the small and midsize company offering low-cost products through a joint venture, advises Terry Boyle, sales director of Wayne Kerr Electronics Ltd., part of the Farnell Electronics Manufacturing Group in Sussex, England.

Wayne Kerr has conducted business in Eastern Europe for the past decade, says Boyle, and now draws about 30% of its revenue from the region. The company—reportedly the only ATE company to set up shop in Eastern Europe—will sell its low-cost testers in Budapest via a joint venture with a Hungarian investor who will market the products and provide the contacts and technical support. "In the old days, [Western] companies preferred to work with distributors or agents," says Boyle. "Now the trend is to cut costs by going direct. Meanwhile, the Eastern European buyer demands technical support and advice on doing business. You can't get that from a rep."

Hungary

Land area: (sq km)	93,030
Population: (1988)	10.6 million
GDP: ($ billions, 1988)	$68.8
GDP per capita:	$6,491
Growth of GDP: (1986-88)	1.5

Source: OECD, World Almanac

A U.S. Department of Commerce source noted earlier this year that Poland plans to invest $7 billion to develop its telecom system by the year 2000, adding 7 million lines to the present network. Despite the presence of 20 or so Polish telecom producers, domestic demand far outweighs supply. Equipment that is available comes primarily through old licenses from Western companies; E-10 switches produced by Poland's Telkom-Teletra are based on a 1972 license from France's CIT.

Western companies are warned to scrutinize their marketing strategies and financial positions and those of prospective Eastern European partners. Does your company enjoy the resources to ride out the economic ups and downs that are sure to accompany democratization? "Even if your company can afford it, how will management and the shareholders accept that the necessary cash flows will be exposed to unpredictable economics and financial fluctuation or apparently irrational political and social turmoil?" asks Maurice Olivier, vice president of Arthur D. Little International in Brussels.

For companies planning a partnership with an Eastern European company or agency (generally the least risky entry to a new market), it is essential to identify and consider issues practically unheard of in Western nations. "It is a very uncertain legal situation with respect to joint ventures," says Karl Leitenberger, deputy director of economic policies at Siemens AG in Munich. "The companies are heavily in debt and haven't revealed their balance sheets. No one even knows who owns the property there."

Be prepared as well for a completely different style of doing business, warn most sources. While Soviet and other workers in the East are by no means lacking in intelligence, three generations of centralized planning have left millions of them lethargic, suspicious, and resistant to change. One result: Productivity rates in Western Europe are three times higher than in the East, according to Alfred Prommer of Prommer Consultants in Munich.

Everyone agrees that the most important commodity of all is patience. The company out to make a quick buck in Eastern Europe is advised to look elsewhere. Says ADL's Olivier, "The payback period will be at least 5 years, and possibly up to 10 years." □

Poland

Land area: (sq km)	312,678
Population: (1988)	38.4 million
GDP: ($ billions, 1988)	$207.2
GDP per capita:	$5,453
Growth of GDP: (1986-88)	1.0

Source: OECD, World Almanac

Romania

Land area: (sq km)	237,500
Population: (1988)	23.3 million
GDP: ($ billions, 1988)	$94.7
GDP per capita:	$4,117
Growth of GDP: (1986-88)	0.1

Source: OECD, World Almanac

Yugoslavia

Land area: (sq km)	255,804
Population: (1988)	23.8 million
GDP: ($ billions, 1988)	$154
GDP per capita:	$6,471
Growth of GDP: (1986-88)	N/A

Source: OECD, World Almanac

The color of money isn't always green

Getting capital in Europe is only part of the problem. Steering through currency fluctuations could be even trickier

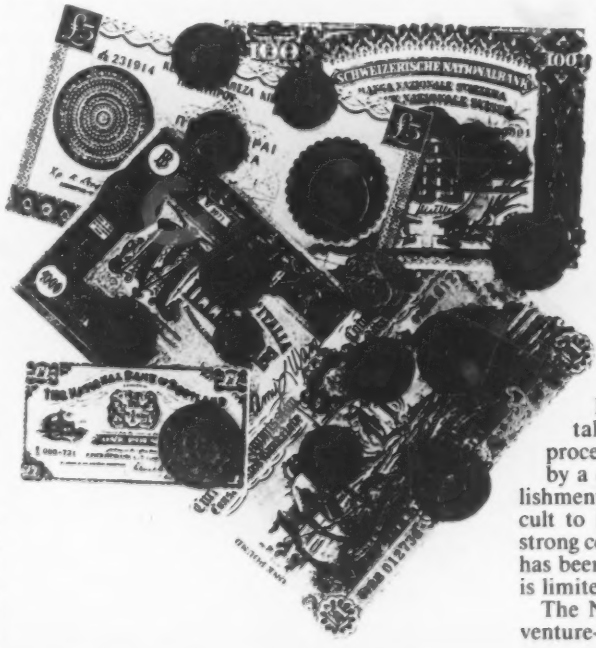
BY TERI SPRACKLAND

More than fluency in languages, the ability to think in currencies other than dollars is vital to economic success in Europe. Business sense as learned in the U.S. marketplace won't enable one to acquire or manage capital in the quicksand of the European markets.

For some U.S. companies the first lesson may be how to capture venture capital in Europe. For others it may be how to manage the flow of expenses and profits in more than one currency. In either case ignorance could be fatal to profitability.

The venture-capital scene in Europe is still fluid because even the more mature venture markets are less than 10 years old. Financial markets do not support initial public offerings to the extent seen in the United States, and profit-to-earnings ratios differ considerably. Europe has yet to define a successful formula for exit strategies, so a key to successful capital hunting in Europe is to outline an exit plan—be it by IPO or by acquisition.

Even though money has fewer territorial barriers than ever before, there remain limitations to international venture-capital flow. But as markets become more internationalized and the European venture-capital market matures, venture capitalists are looking for a mechanism that will help ease the flow of money both within Europe and between Europe and the rest of the world. In the next few years, they expect intercountry differentials in cost and availability of capital to be wiped away, thus lowering some of the risks as the landscape of the European market undergoes rapid changes in virtually all industries.



Scouting the markets

The capital markets are still developing, each country has its own flavor, and expectations differ widely.

The 1989 survey of European venture capital conducted for KPMG Peat Marwick shows that about 3.48 billion European currency units—$4.77 billion—was raised in 16 European countries, up 19% from the previous year. Even Iceland and Finland are now participating. Newcomers Austria and Portugal increased venture capital raised by more than 200%. Although increases in the U.K. and France were less dramatic at 20% and 29%, respectively, the amounts raised in 1988 were substantial: $438 million in the U.K. and $199 million in France.

The U.K. is the leader in the venture-capital market in Europe, with a world-class financial structure, yet it has become absorbed of late with management buyouts.

France ranks second in terms of venture capital raised. Willy Conig, a former Intel executive and now a venture capitalist based in Monte Carlo, says France offers many opportunities for investment, but ingrained attitudes can sometimes create roadblocks. Although the Alpes-Maritime district near the Riviera offers high-tech businesses opportunities, it has taken years to resolve simple infrastructure problems, he says.

Italy's venture-capital business is growing rapidly, although less predictably than in Northern Europe. The entrepreneurial spirit is respected, but many deals are done through family groups, especially among smaller enterprises.

In Germany, venture capital is a relatively unknown process as funding is controlled by a conservative banking establishment. Exit strategies are difficult to implement, equity is not a strong concept, the tax environment has been unfavorable, and liquidity is limited.

The Netherlands has a maturing venture-capital industry, due to the

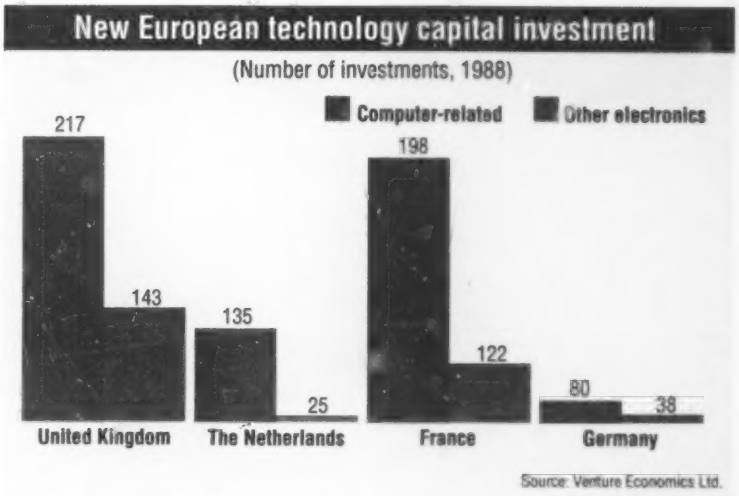
multitude of venture-capital firms and an awareness of international opportunities, thanks to the traditional Dutch focus on export. Its 1988 growth rate was a high 158%. Banks and pension funds remain the largest sources of funds, according to the survey. However, investment in high-technology companies declined slightly between 1987 and 1988. The average investment size in the high-tech sector was $604,170.

"In 1984, the European Roundtable of Industrialists realized we had to stimulate innovation or die of Eurosclerosis," says Albert Kloezen, managing director of Euroventures Europe, in 's-Hertogenbosch, The Netherlands. "Euroventures was the first venture, supported by 12 major industrial shareholders. Euroventures created a transnational venture-capital group. The group is still 60% industry-supported, with 40% from banks and other institutions and $3.62 million under management," he says. The group expects a 15% after-tax profit this year on its portfolio.

"Europe started later in venture capital, but we have learned from others' experiences. The techniques are not so different, but the original investors were more often banks and industrial companies," Kloezen says. Industrial companies gave $40 million to start Euroventures, and about 5% to 7% of the deal flow for Euroventures is coming from companies in the United States.

Kloezen, whose group recently started a Hungarian venture-capital fund, says ventures in Eastern Europe are much easier to manage from a European base than from outside Europe. "Strategic alliances for the next 10 years are being made now," Kloezen says. "We are also going into Poland and Czechoslovakia to act as a matchmaker and as an educator. We hope to teach capitalism to the new entrepreneurs of Eastern Europe."

Kloezen cautions against joint ventures, which he claims are fraught with problems when partners are unequal. "It is much better to start with an alliance to get acquainted. A successful alliance can end with a joint venture. It shouldn't start with one," Kloezen says. "People must realize that the power structures at the global level are changing. Alliances that have been valid for nearly 30 years are no longer secure."



Another problem in getting venture capital in Europe is the limited availability of seed money, he says. Cautious players avoid risk by being second-stage investors.

Maturing sectors of the European venture-capital industry are under shakeout stress, according to Nick J. M. van Ommen, managing director of a Belgium, Netherlands, and Luxembourg fund of Euroventures. Last year, participation in the Dutch venture-capital industry topped $4 billion, drawn from about 80 organizations. In addition to Euroventures,

Capital markets are still developing; each country has its own flavor

major Dutch venture-capital players are MIP, Atlas, and NORO. Many of the smaller companies are straining for the resources to meet second-round financing, says van Ommen.

Still, the unification of the European market will produce economic growth of about 1% a year, equivalent to twice the growth experienced under the Marshall Plan, according to an European Community report. Europeans are increasingly willing to invest in cross-national deals, especially as opportunities in Eastern Europe and the unifying Common Market appear. Hungary tops many investors' list as the most advanced former Eastern bloc member.

Business in Europe is fundamentally more hierarchical than in the United States. The idea of selling the privately developed company to an existing company is not cloaked in an aura of failure or desperation, as it may be in the United States. European investors and industrialists are much more likely to see opportunities in amalgamation.

The currency conundrum

Funding is only part of the challenge in managing capital in Europe. Compaq Computer Corp. recently made a dramatic increase in profitability because it found itself on the upside of a currency change. But where there are windfalls there can also be pitfalls.

Although large multinational companies have been coping with currency fluctuations for years and are well-versed in the process, the small to medium-size U.S. electronics companies, or those without a lot of time on the international scene, may be unprepared. In addition, expertise in international capital management in companies may be sequestered within the CFO's office, while the implications of these decisions are strategic in scope.

In the past, European currencies would fluctuate freely against each other, pushed or swayed by the elements of national events or policies. However, as the German economy

Companies discover how to open the European money box

Although market opportunities appear to be growing faster in Europe than in the United States, it is not always easy to match U.S. companies with European investors.

Innovative approaches, though, can open up the money box.

For Sybase Products BV in The Netherlands, the answer has come from a plan proposed by its managing director, Guus Alink. Sybase was not able to offer sales support on a grand scale when it started its European operations; in fact, the software company employed only 50 people worldwide. Alink saw an opportunity for structuring a type of joint venture that factors in the difference between profit-to-earnings ratios in Europe and those in the United States.

Eurosem's Dean Strausl says finding local connections can be almost as important as finding capital

"The joint venture is established so that the U.S. company can acquire the European company at a take-over price set at 85% of the U.S. profit-to-earnings ratio times the profit made by the European venture," says Alink. Prior to the acquisition, the U.S. company gets royalties on all its products sold through the European venture. The U.S. company makes royalties until it is ready to acquire the European venture, at which time it also makes a profit. This deal attracts local management, who get to share in the company's success.

He cautions the strategy is only effective in high-tech deals because that is where the difference exists in profit-to-earnings ratios. "You need a crew of people with the right expertise to match the Americans' expectations, or there will be problems in integrating the venture once acquired," says Alink.

A royalty-based deal is particularly suited to software companies, whose income is largely derived from royalties. "The software market is dominated by the Americans, who have unquestionable leadership," Alink notes.

Managers for such ventures can be found among the second tier of local companies, Alink says. "Look for guys who don't have a stake in another company yet. They bring the resources of their relationships and can assist in the financial planning," he advises.

A venture project that stumbled and is now regaining its footing with an infusion of local money and connections is European Semiconductor Assembly (Eurasem) BV, a Netherlands-based subcontract semiconductor assembly and test facility.

Eurasem was created in 1987 by Dean Strausl, a former manager at Advanced Micro Devices Inc., to produce high-pin count surface-mount packages for international semiconductor makers. But the confusion over local content rulings expected from the EC pushed the company to the point of bankruptcy as potential U.S. clients remained indecisive, says Strausl.

Only the building of a complete fab assembly facility in Europe (at a cost of $200 million to $400 million) will allow a company to escape paying EC duties on its products, but duties can be minimized by bringing products into the EC at the wafer stage, says Strausl. He warns that fab time will soon be harder to negotiate for smaller companies looking for local foundry deals.

In 1989, Eurasem was bought out by Joep Van Den Niewenhuyzen, the managing director of the Begemann group of companies, a $1.2 billion industrial holding company from The Netherlands. Van Den Niewenhuyzen has made a striking impact on the European venture-capital scene with the acquisition of more than 80 companies and an annual sales growth rate of 100% per year for the last six years.

The addition of a local connection may be nearly as important to the survival of Eurasem as the money invested, says Strausl. Although local business groups were very supportive during the growth of Eurasem, the lack of access to informal business networks made the growth of the company more arduous. Many subtle differences, from education levels needed at different hiring levels to overtime expectations, can affect a new business, he says. □

has become more pivotal within Europe, other countries have brought their currencies into a narrower trading range with the German mark. For some years, the Dutch guilder has been aligned with the mark, and even the French franc trades within a predetermined range on the basis of the French government's determination not to let its currency slide below Germany's.

In early October, after much hesitation, the British entered the pound into the European Monetary System and thus linked their currency's future to those of continental Europe. The EMS was founded in 1978 to encourage trade by reducing currency risks. For the British, it was a traumatic decision which involved not only concerns over the comparative economic strength but the political backlash of forfeiting control of the pound by the Bank of England, which is nearly as much a national symbol as Buckingham Palace. But as is true everywhere in Europe, choices deemed unthinkable last year are linking countries once separated by hundreds of years of suspicion and dozens of bloody wars.

European currencies are starting to move more in unison as the economies become more closely linked. What affects the German mark is likely to affect the lira or the French franc or the pound. The downside for Europeans is that bad economic news anywhere in Europe will spread quickly.

There is both danger and opportunity in the changing circumstances. The combined power of merging

European currencies will buffet the currency markets, whether from a cash or futures perspective. Yet currency merging seems to be happening.

The ECU, the European currency unit, is likely to become a hard currency in the coming decade. Currently, it is a composite currency unit made up of a basket of currencies from the EC. The weight of each currency in the basket can change on the basis of the income and trade of the country. Each currency is given a central parity rate against the ECU and must stay within a specified margin. However, financial transactions (even on the individual level, such as credit-card billings) will increasingly be possible in ECUs.

"One currency is realistic. Before we enter the twenty-first century, we will have one currency. With electronic funds transfers, it will be even more difficult if we don't," according to van Ommen.

Belgium has minted ECUs, but the coins are not in circulation.

For companies whose manufacturing costs are set in one currency but who sell in another, several choices exist to manage currency risk. (Exposure exists any time a company has either funds or investments in any currency other than its local currency.)

One choice is to insist that customers pay in the company's currency of origin. The drawback to this simple approach is that customers may not want to pay in dollars and may, instead, buy elsewhere. It all depends on whether the company feels itself to be in a buyers' market or a sellers' market.

Any company wishing to handle its currency exposure must first define its exposure and then adopt a hedging policy, which can be managed with either internal or external techniques. Internally, a company can minimize its exposure by billing in its currency or by adjusting its foreign-currency selling prices by what it expects to be changes in currency values. It can slow or speed up its receivables or payables. It can change the denomination of its assets and liabilities, or it can hedge only the net exposure after offsetting foreign-currency payables and receivables.

Externally, the company can take out forward contracts, buy options which give it the right but not the obligation to exchange currencies, or sell their receivables to shorten exposure.

Forward contracts can be established through banks or the over-the-counter dealing centers with specified combinations of currencies, amounts, and transaction dates.

Transactions in the forward market allow the exchange of one currency for another at an agreed-upon rate for settlement on a specific date within one year, according to G. Nanne J. Boll, value arbitrage adviser, NMB Bank, Amsterdam. Longdated forwards are those contracts settled more than a year later.

A useful procedure is to hedge foreign currency-denominated payables or receivables in the forward market, according to Boll.

Other safeguards include the hedging of potential foreign-exchange losses from translating foreign-currency financial statements into parent company currency terms. "A company that is bidding on a project may wish to hedge its exposure in case the exchange rate changes," says Boll.

The key, according to Arthur Smit, manager of treasury operations at AT&T Network Systems International BV, in Hilversum, The Netherlands, is a coherent company philosophy in managing currency risk. Evaluate where your company's costs would be increased, but also look carefully at when your competition would be vulnerable, he stresses. A company is not only at risk for costs directly related to its business but can be hurt by the increased competitive stance of a competitor with a different currency base.

Companies can buy on the spot-currency market to acquire currency in the payment denomination needed at the time of the transaction, according to Boll.

The option market developed out of the futures market and now generates as much as $10 billion in daily global transactions. Options exist for pounds, German marks, Swiss francs, yen, and Canadian dollars, written against the U.S. dollar with secondary markets in ECUs, French francs, and Dutch guilders. Options contracted are for large amounts, with most transactions at least $5 million.

Futures trading in currencies has a long history at exchanges in the United States, but currency contracts are more recent and grew as trade became more globalized. The volatility of the European futures markets

Euroventures' Albert Kloezen: "We had to stimulate innovation or die of Eurosclerosis"

can make Las Vegas look like a sure bet. No matter how confident your analysis of market direction, it is truly a bet-the-company decision to wade into the futures markets with a speculative approach.

Professional futures-traders continually emphasize the need for viewing futures transactions by companies as a means of limiting risks, not speculating. Speculation is best left to those who spend their every waking second watching the gyrations of multiple markets.

Corporate investors should take the opposite position in the futures market than they hold in cash, in essence paying an insurance premium against the possibility of loss. □

Texas Instruments supplies Europe with homegrown chips

TI's production goals and Italy's strategy for development find a meeting ground in the town of Avezzano

BY TERI SPRACKLAND

Italy's Mezzogiorno region, southeast of Rome, is the site of a $1.2 billion industrial development effort. Not since the Romans held mock naval battles on the now-vanished lake has so much engineering been focused on the region. The key to the effort is Texas Instruments' first MOS memory fab in Europe.

The project, a 4- and 16-megabit DRAM fab with a clean room the size of a soccer field, will complete TI's strategy to put memory manufacturing in Asia, the United States, and Europe. All of TI's memory customers in Europe will be able to buy European-made chips, with the overflow available for export. The fab itself, already in pilot production, will cost more than $250 million.

The small town of Avezzano is nearly dwarfed by the size of the construction site, but local authorities are working closely to keep the project in harmony with the town. Everything from housing to educational needs for new employees had to be considered, but Avezzano's aggressive young mayor, Eleuterio Simonelli, clearly intends to integrate the project into a local framework. Although both American- and Japanese-style grade schools have been opened for TI employees, Simonelli rejected a request to build a separate housing project and high school. He prefers to scatter newcomers throughout the neighborhoods rather than create a separate expatriate community.

The town was damaged in World War II and by an earthquake earlier in the century. Everything from new water-supply systems to electrical substations had to be built to accommodate the project. As the infrastructure is put in place, the local, regional, and national authorities hope to see it become a nucleus for further development.

Most of Italy's electronics industry has been concentrated in the north, especially around Milan. Italy has created a set of incentives to develop Mezzogiorno, and Texas Instruments is the first foreign company to make use of them. "Practically every foreign company investing in Italy has come through Avezzano. There have been five new banks opened in the last 10 months," notes plant manager Antonio Cuccurullo.

In addition to semiconductors, the agreement with the Italian government provides for the upgrade of semiconductor assembly and test operations and expansion of calculator manufacturing at Cittaducale and the expansion of electrical controls production at Aversa.

Yet even for a company important enough to get the enthusiastic support of its host country—to the tune of $700 million—the road to profitability is never smooth. The specter of excess production capacity in Europe, where Asian companies pour billions of dollars into building semiconductor plants, is looming. In addition, the economic downturn expected in the U.S. economy is likely to spill into Europe eventually. Even if European trade barriers materialize, however, pricing on commodity chips has become a worldwide market decision.

"Our strategy for semiconductors is that we want to significantly expand submicron CMOS capacity, implement that capacity early enough in the market to grow with the market, and put this capacity where we need it to support our customers around the world," says Roberto Schisano, vice president of Texas Instruments' Semiconductor Group. "Avezzano is a cornerstone of this strategy. If you look at our worldwide capacity, by 1992 we will quadruple our existing CMOS wafer-fab capability."

Like many observers, Schisano, formerly head of Italian operations, believes growing demand from an increasingly dynamic European economy will mean strong components sales throughout Europe.

At one time, TI kept its capacity concentrated. Now, service and sourcing demands have led TI to the conclusion that, as manufacturers, they can't afford long cycle times and remote locations.

"With this program we will expand and improve our European operations in three areas: semiconductors, calculators, and electrical controls," says Jim Hubbard, senior vice president of the Semiconductor Group and general manager of European operations. "National markets are dis-

Texas Instruments Europe at a glance

Fiscal year	1989 ($ millions)	1989 (% of total)	1988 ($ millions)	1988 (% of total)
Net revenue	$969	14.9%	$991	15.4%
Operating income	-30	-8.5%	-3	-0.6%
Identifiable assets	574	11.9%	530	12.0%
Number of employees	7,000	19.3%	7,000	19.8%

Source: Company reports

appearing. We expect to see more mergers and alliances. There is a lot of political pressure not to merge with the Japanese. The question is, who will survive?"

Many global companies have discovered that sales, distribution, and manufacturing can no longer be handled efficiently on a country-by-country basis. Some, like TI, are already moving to a pan-European structure, which is less autonomous but offers more economies of scale.

For Texas Instruments, the Avezzano project is the culmination of a 30-year evolution of a pan-European strategy intended to keep the company close to its customers. With most of Europe unifying into one market, TI expects the strategy to pay off. TI ranks among the top 150 European technology companies, with 8 manufacturing sites, 32 sales and marketing locations, 8 regional technology centers, over 7,000 employees, and $1 billion in annual sales. Almost one out of every 10 TI employees lives in Europe. TI does business in 15 European countries.

Only N.V. Philips outsold TI in integrated-circuit sales in the European market in 1988, while TI boasts the number-one spot in MOS memory and bipolar logic.

Semiconductors make up about half of TI's total trade activity in Europe. The rest comes from industrial automation and control systems, business computer systems, consumer electronics products, defense electronics, metallurgical materials, and electrical control products.

Manufacturing operations were started in Bedford, England, in 1957, making TI the first U.S. semiconductor company to build a plant in Europe. It now has manufacturing operations in Nice, France; Almelo, The Netherlands; Freising, Germany; Porto, Portugal; and several locations in Italy. Semiconductor support centers are divided into local areas of expertise, with France the center for MOS logic, automotive and telecommunications, military, and space integrated circuits. Germany is the center for digital integrated circuits, sensors, and gallium arsenide. The Italian center supports ASIC memories, and the British center supports ASIC systems, analog design, VLSI design, and computer-aided design software.

There are regional technology centers in Frankfurt, Hannover, and Stuttgart, Germany; Velizy, France;

How Italy's new incentives helped TI set up shop

European governments have been scrambling to snag key development projects by multinational companies before the Single Market opens its doors on Jan. 1, 1993.

"It is almost a bidding war out there," notes Adriaan Roosen, manager of the West Coast branch of the Netherlands Foreign Investment Agency, a branch of the Dutch government that seeks out foreign investors worldwide. Some countries provide direct cash incentives. Others maintain that productivity and location issues are at least as important to long-term success as direct grants. Holland, for example, bills itself as the gateway to Europe and notes 60% of the population speaks a second language, and about 12% speak three languages.

Last year, Texas Instruments became the first foreign multinational company in Italy to sign a *contratto programma*, or planned contract, with the Italian government for investments in the Mezzogiorno region.

The incentives have, until now, been used only by major Italian companies such as Olivetti and Fiat. Other multinationals are now expected to follow TI into the planned negotiations. The process is complex and requires constant contact with government officials, but it can pay off.

TI received $700 million in direct grants, about 57% of the total cost of the project. "That is more than the Italian government has ever invested in SGS-Thomson," notes Carlo Longoni, SGS-Thomson Microelectronics' corporate VP of headquarters and European regions.

There were several keys to TI's success:

- Defining specific research, development, and training elements;
- The government's intent to grant incentives;
- TI's description as a "large industrial group" to meet specifications;
- The public-works projects, costing about $13.9 million, that were covered by the government;
- Formation of a research consortium involving TI and the University of L'Aquila.

In the case of Texas Instruments, the planned negotiation was approved by the Italian Interministerial Committee for Industrial Planning (CIPI). A preliminary proposal was prepared by TI with the help of local consultants specializing in technical, fiscal, financial, and legal expertise on the Mezzogiorno. By March 1989, TI presented the preliminary proposal.

The final proposal, a much more complex version, was finished in about three months and describes the company, its business and economic effect on the Italian economy, and its products, production cycles, and investment plans.

Legal preparation of the contract was done by TI and the Mezzogiorno Ministry, with careful consultation, revision, and approval every step of the way. The process was at one point delayed by the fall of the Italian government, but in October 1989, the project was reviewed by the Budget Ministry and sent to CIPI for final approval.

In total, the state committed over 964 billion lire, about $686 million at the time. $307 million was for the new plant in Avezzano, $12 million was for the expansion of the plant in Cittaducale, and $9.9 million was for expansion of the plant in Aversa, for a total of 44% of costs. The research center in Avezzano received $39 million in direct state investment, and the research center in Aversa received about $774,000, 74% of costs. Five research projects were funded at $293 million—about 80% of R&D costs—while training projects received $22 million, or about 90% of training costs.

BY TERI SPRACKLAND

Amsterdam, The Netherlands; Milan, Italy; and Stockholm, Sweden.

Satellite connections through TI's worldwide telecommunications systems allow rea[illegible]acking for customers' produ[illegible]formation requirements. T[illegible]sign centers in Bedford, Nice, Fr[illegible]g, and Rieti, Italy, are linked by satellite to other TI centers around the world.

Texas Instruments' Italia SpA ranks as one of the 150 largest companies in Italy and in the top 15 in electronics. Its involvement dates back to 1958, with the production of components for household appliances at a plant in Aversa. Eventually, a subsidiary was formed in 1985, headquartered in Cittaducale. The subsidiary's sales grew 20% last year to more than $320 million. The expansion of TI's operations in Italy adds about 1,000 new jobs to the existing 2,000 in Italy.

TI's plans for Europe extend beyond Italy. "If the European Community and 1992 is a political vision, the economic realities are bringing it about. The real driver is the strength of the economic needs," concludes Schisano. "Even if you consider Europe as one area administratively, it is certainly not one country. It has taken us 20 years to grow up with Europe and develop our European strategy. And that means much more than just having a foothold in one place in Europe." □

Avezzano is a cornerstone of TI's global strategy, says VP Roberto Schisano

A lucky twist of fate for Burr-Brown Corp.

With 31% of total sales, the company's European units couldn't have worked out better if they had been planned

BY H. GARRETT DeYOUNG

Ask most U.S. companies to recall how they kicked off their overseas operations and you are apt to get a dissertation about expansion strategies, long-range market analysis, and lofty plans for "going global."

But not at Burr-Brown Corp. "It was pure serendipity," shrugs James J. Burns, president and CEO of the Tucson, Ariz.-based analog-circuit design company. "Our rep in the United Kingdom went bankrupt back in 1971, and rather than hire another, we set up our own operation. It turned out to be a good decision."

Pretty good[illegible] Burr-Brown's U.K. subsidi[illegible] so successful that it soon [illegible]any owned subsidiaries in France, Germany, Sweden, Austria, Belgium, and several other countries. In some cases, says Burns, market revenue tripled during the first year. European sales now account for about 31% of Burr-Brown's total annual revenue of $112 million; the rest is divided about equally between Japan and the United States.

Each of the company's European units are to some extent unique, of course, since no two markets are exactly alike. But all share a few basic operating principles—knowing the customer's needs and idiosyncrasies, for example—and tying into local resources, which are on view at Burr-Brown's European headquarters in Filderstadt, Germany, near Stuttgart, in the heart of Germany's high-tech belt. Primary targets for the unit include the high-end sectors of the German medical-instrumentation and numerical-control markets. Sales this year will total about $31 million and grow by some 25% a year, beams Tilman W. Kiess, the supercharged extrovert who directs the company's European operations. "Some of our competitors rely mostly on good marketing," says Kiess. "Our strategy is to move quickly into new applications then follow up with technical support."

One of Burr-Brown's first decisions was to hire Europeans to run the new sites rather than send over U.S. managers. The reason, says Burns: While most Europeans are fluent in English, many are more comfortable conducting business with fellow nationals in their own language. It is too easy for even the most skilled American manager to miss a subtle but vital point because of obscure cultural or linguistic barriers.

As it was with the original decision to set up shop in Europe, little analysis went into picking Filderstadt as the company's German headquarters. The most important factor in making the decision was to have Kiess run the new unit, and Kiess just happened to live in the area. "But Stuttgart also is at the very center of things in Germany, and there is an excellent foundry service in the

Burr-Brown Europe at a glance

Fiscal year	1989 ($ millions)	1989 (% of total)	1988 ($ millions)	1988 (% of total)
Net revenue	$51	30.6%	$48	27.1%
Operating income	2.9	33.3%	1.4	12.1%
Identifiable assets	25.6	15.9%	20.8	15.6%
Number of employees	275	17.8%	270	18.3%

Source: Company reports

Tilman W. Kiess: "Our strategy is to move into new applications then follow up with technical support"

area," explains Burns. "So it was a fortuitous decision."

That was about 15 years ago. Since then, Burr-Brown has learned a thing or two about doing business in Europe. Perhaps most important is the recognition that Europe is and probably always will be a crazy-quilt of quirks and irreconcilable differences. Warns one German electronics CEO: "The biggest mistake U.S. companies make is to set up an office somewhere in the United Kingdom and say, 'Now I can sell in Europe.'"

In France, for example, business tends to depend largely on personal relationships between the vendor and the buyer, explains Kiess. Italian and British buyers are similarly undemanding but can be fickle, changing specs—or suppliers—with little notice. On the other hand, Swiss and German buyers are obsessed with product performance and overall quality. "They will drive a product 125% or 150% beyond the specifications," says Kiess. "That puts a lot of emphasis on service and support."

Equally important are the regional differences that abound in larger nations, such as Germany. Kiess complains that the Filderstadt team comes up with "more good [analog-design] ideas than we can execute—we just can't find enough good analog people." But unlike Americans, skilled German workers are reluctant to relocate from one area to another—especially between the scenic, laid-back Swabian region in the south and the hard-driving industrial north.

Finances pose another key distinction between European nations. Since Germany lacks a mature venture-capital industry, for example, the nation's powerful banks play a much larger business role than in many other countries. (Most Germans still prefer cash to credit, so the average citizen becomes a fixture at the local bank by maintaining several bank accounts throughout his or lifetime, starting early in life.) Burr-Brown thus kicked off its European expansion by setting up banking relationships all over Europe. Result: an unsecured line of credit guaranteed by the parent company in Tucson.

Part of Burr-Brown's success in Filderstadt is also due to good old-fashioned networking. While most U.S. companies find Germany a relatively unintimidating starting point—there are few legal or governmental constraints—Kiess stresses the need to link up early with other companies. Given its emphasis on medical, industrial, and high-definition TV markets, for instance, Burr-Brown teams up frequently with Siemens AG, which accounts for about 30% of the unit's revenue. "A new company needs contacts to describe the local rules," says Kiess. "Buyers here aren't impressed by shiny catalogs or big trade shows but by solid data that is presented well."

Burns concedes his share of mistakes along the way, including the failure to centralize the company's inventory and applications-engineering functions at the outset. Otherwise, he claims, he would do it over again in an instant. "Sure we were scared at first," he admits. "You never know how successful you are going to be or how much it will cost. My advice is that once you have made the decision, trust your instincts and just do it. . . ." □

Sun Microsystems aims for first place in Europe

The company has been in Europe since 1984, but leadership remains elusive. That's the challenge for the workstation maker

BY BARBARA N. BERKMAN

Every week, Scott McNealy throws away a handful of letters from marketing gurus trying to sell him information on how to cope in the European Single Market of 1992. "I'm still not sure what 1992 means," says McNealy, CEO of Sun Microsystems Inc. in Mountain View, Calif.

McNealy isn't the only one who is confused about 1992. But Sun has never let itself get bogged down in abstractions about the New Europe. "You just use logic and common sense," McNealy says.

Sun has spent the past six years using common sense and logic to build its European operations. The company's first move was to England, where it set up a sales and distribution center. Today, Britain contributes about 30% of Sun's European revenue. All told, Sun has eight European direct-sales units and plans to add two more during 1991. European sales are approximately $700 million, about one-third of the company's total revenue.

When they first started out, McNealy and Sun's other young founders knew nothing about the European market. But they did recognize Europe's importance as one of three strategic markets in its global strategy—the other two being North America and the Far East. That strategy called for becoming the biggest workstation vendor in the world.

Over the years, though, Sun's strategy in Europe has changed. In the early days while impetuously grabbing market share, Sun ran itself with an unstructured style dictated by the sizzling pace of its growth. But the days of easy growth are over. Sun's real test of success in Europe will come in the next few years.

The question now facing McNealy is this: Can Sun outrun the competition to win market domination in Europe? To do so, it will have to battle market heavyweights such as Digital Equipment Corp., Hewlett-Packard Co., and IBM. Sun is giving itself 18 months to become the dominant European workstation vendor. That means becoming the clear market leader in Spain, Switzerland, Austria, and Germany.

"Relatively speaking, we aren't doing as good a job in Europe [as the competition]," admits McNealy. "We still have incremental investments to make in research and development, manufacturing, sales and service, and marketing." He labels Sun's challenge as "growing faster and investing more."

McNealy thinks Sun can climb to the top of the European workstation market. He plans to win market share in three ways:

- By saturating the European market with improved customer service;
- By selling workstations manufactured and serviced locally;
- And by designing products at its networking research center in Grenoble, France.

The critical issue for Sun in Europe is funding for growth. So far, the money has been forthcoming. While Sun's overall profits slid in 1989, Sun's European operations were thriving. Earlier, during the mid-1980s electronics recession in the United States, Sun didn't extend its hiring freeze to Europe, where the market was solid. "The balanced, mature answer may have been to slow down globally. But McNealy was willing to take risks," says Darryl Barbe, vice president of European operations. A resident of Europe for almost two decades now, Barbe was hired from DEC to start up Sun's European operations.

Sun avoided skimping on its European budget until it reported a $20.3 million overall loss in the fourth quarter of fiscal 1989. Then, Sun's management prudently delayed construction of a manufacturing plant in Scotland during those lean times.

The purse strings are being pulled even tighter now as the U.S. and European economies slow. Sun in Europe runs under McNealy's global edicts. When he circulated a memo in October that froze all non-essential expenses, Sun Europe also had to take a hatchet to intercontinental travel and discretionary hiring.

McNealy's goal is for Europe to contribute one-third of Sun's global revenue within five years

Sun executives claim that European market dominance will come only if Sun sticks to its global game plan. "We knew if we didn't get started in Europe right away, the company probably was not going to succeed. That was all the vision we needed to get started in Europe," recalls Barbe.

Sun Europe grew by leaps and bounds in those early heady days. During the six months from the time the company set up operations in Europe to the end of its second fiscal year, Sun grew from $9 million to $39 million in sales.

"It has always amazed me how Sun was able to operate with no real infrastructure in place at the beginning," recalls Richard Barker, vice president of European finance. "The sheer madness of getting started meant you could be dealing with petty cash in the morning, and in the afternoon you were negotiating a multimillion-dollar deal and setting the prices that would govern the company for the next several months."

For the first two years, the company stretched its European infrastructure. Unlike Sun's MIS system in the United States, which ran on a Hewlett-Packard model 3000 minicomputer, Sun's European MIS system functioned on PCs. "There was a dramatic undersizing of our business. We were playing catch-up in Europe," Barbe admits.

The experience left Barbe with one piece of advice for fast-growth companies. "If you are planning to grow like we did at Sun, overhire at every key job. It gives you a much lower turnover rate." In Europe only one key manager has left the operation, while the parent company has watched its attrition rate creep as high as 11.5%.

Sun's early strategy was to sell direct only in Britain, France, and West Germany under the guidance of native country managers. Barbe asked them to produce plans detailing how much revenue their markets would generate and how many salespeople were necessary to make that target. Sun's European financial director then stepped in to determine if Sun could afford the investment. Unlike many companies just starting in Europe, Sun was lucky; its quick growth justified an aggressive investment posture.

During Sun's first year of operating in Europe, Barbe set up a distribution network in Italy, Sweden, The Netherlands, and

Sun's Scott McNealy (center) beams with pride at the recent opening of the new Sun Linithgow, Scotland, manufacturing plant. With him are (left), Ian Bell, VP of Linithgow operations and Kevin Milla, VP of worldwide operations

Switzerland and later expanded the network to include Denmark, Norway, Portugal, Israel, Turkey, and Iceland. Sun Europe also is responsible for sales to the Middle East and Africa.

European distributors were tricky to manage, according to vice president of worldwide field operations Carol Bartz, because they knew that in time Sun would replace them by going direct. Tension in managing the distributors eventually eased, according to Bartz, when many distributors went on to become value-added resellers and OEMs for Sun.

Some 700 VARs now peddle Sun's workstations in Europe. Within six months the company will decide on a strategy for alternatives to VARs, such as a dealer channel. "It is a lot different in Europe than in the United States, because there is no one dealer [in Europe]," says Barbe.

Sun's strategy is to reach corporate decision makers—buyers who "don't go down to Businessland," according to McNealy.

Key to Sun's international plans are alliances with local OEMs and VARs. The first European agreement was with Oce-van der Grinten NV, a Dutch maker of high-quality copiers. "It never took off into McNealy's high-volume dream. Oce was expecting to build this into dramatic numbers," says Barbe.

But he shrugs off the failed expectations, arguing no company can accurately and consistently predict upfront the success of a venture. "You need to go after a multiple number of opportunities. You go after as large a number as you can. One or two or three won't succeed."

Sun also has relationships with Matra SA, Telefon AB, L.M. Ericsson, International Computers Ltd., and the Nokia Group. Berthold AG, a German printing company, packages some 5,000 Sun units into its publishing systems each year. Both NV Philips and Siemens AG are low-volume buyers of Sun's technology for use in their medical imaging systems.

Philips and Matra are licensees of SPARC, Sun's RISC architecture, in part because of Sun's drive to make SPARC an industry standard. Sun also wants to establish a European source for silicon to appease European customers concerned about single sourcing.

Sun looked for maximum mileage from the relationships it struck with European OEMs. Sun sold its workstations in Scandinavia through such distributors, OEMs, and end users as Ericsson and Nokia so that Sun could delay the costs of adding a direct-sales presence there until 1988.

Also in 1988 Sun management decided to build the company's first manufacturing plant outside the United States, in Linlithgow, Scotland. Compaq Computer Corp., in comparison, was a four-year-old company when it announced that it would build a Scottish plant in November 1986.

Sun wants a leading position in Europe for workstations within 18 months

Sun took a risk by setting up its first manufacturing plant outside the United States. As a result, it must train a workforce in its manufacturing techniques, educate local suppliers, and work out the logistics of distribution in a foreign country.

The company shunned the cheap route to manufacturing in Europe by moving into an existing facility. It built a new facility, but unlike Compaq and Conner Peripherals Inc., who received incentives from the Scottish Development Agency for locating in targeted development areas, Sun chose a site that wasn't slated for financial assistance.

"Sun believed the site and the plant were a marketing tool, a statement of self-esteem and image," says Robert Crawford, North American director of the SDA. "I don't think there was a site in Scotland they didn't look at."

Top company executives eliminated a continental Europe site early in the process. At the time, 27% of European sales were in Britain, with only 23% in France and 18% in Germany.

With Scotland chosen, the SDA assisted Sun in site selection and development. Crawford estimates that the agency spent $180,000 on videotaping undeveloped sites, helicopter viewings of sites, architectural guidance, airfare, labor, and assistance by local Scottish governments. That figure does not include Sun's actual financial-aid package, which Crawford describes as "a very good deal." The plant cost about $18 million to build and was capitalized at some $30.6 million to fill out, according to Ian Bell, plant manager.

Shipments from the 140,000-square-foot manufacturing floor started in June. By April 1991, Sun expects its capacity will hit 288 workstations a day. The plant can produce the SPARCstation 1+ and the SPARCstation IPC. Unlike Sun's Milpitas, Calif., plant, the Linlithgow factory is set up so that a unit takes about 15 minutes to assemble. One worker assembles the computer and then runs it through initial testing to encourage ownership and accountability for the work.

The Scottish plant will follow U.S. policy and subcontract its assemblies. Britain's ICL, with which Sun has a marketing agreement in the United States, won a contract—worth more than $36 million—to be Sun's sole source for printed circuit boards for the Linlithgow plant. "We would like to find indigenous suppliers and work with them," says Kevin Melia, vice president for worldwide manufacturing operations.

But finding suppliers and training a new workforce may prove difficult. "They will have to train a whole workforce in the Sun way of manufacturing," observes Stratton Sclavos, an American who is acting general manager of Mips Computer Sys-

Sun Europe at a glance

Fiscal year	1990 ($ millions)	1990 (% of total)	1989 ($ millions)	1989 (% of total)
Net revenue	$427.5	24.2%	$241.9	23.0%
Operating income	14.9	16.9%	-1.3	-1.2%
Identifiable assets	207.6	16.4%	181.8	24.0%
Number of employees	1,430	14%	946	13.3%

Source: Company reports

tems Ltd. in Marlow, England. "I would wager they will have trouble ramping it up as quickly as they think they can."

Indeed, the frenetic pace of Sun seems odd in Scotland. McNealy feels the clash. "It is a big, big surprise to be opening a plant in Scotland, talking of the history of something eight years old in the shadow of castles a thousand years old." To address culture gaps a blue-jean clad McNealy appears in employee videos. He claims the videos effectively communicate Sun's message and "its loose, informal style." The 150 Linlithgow employees, McNealy asserts, "are so Sun it is scary."

To address the need for local product development, Sun officially opened its first European research and development facility in France in September. Located in Grenoble, the International Center for Network Computing will focus its efforts on developing high-performance Open Systems Interconnection products, OSI network-management facilities, and programmer aids for international computing. Sun will export software designed there directly to its customers around the world.

"The French are pioneers in networking and communications and will soon lead the world in software production and research in those areas," predicts Eric Schmidt, who oversees new-product development as vice president of Sun's General Systems Group. Sun chose Grenoble, he explains, because of the OSI talent located there. The University of Grenoble, for example, has a strong tradition in network research and close ties to industry.

Sun took a risk by setting up its first manufacturing plant outside the United States

Sun recruited Jean-Pierre Baudouin, a network research veteran from Hewlett-Packard, to head up the new center. By 1991 Baudouin plans to add some 25 additional European software engineers to the existing staff of 10. The Grenoble center is starting small, but Sun is not limiting its growth. "Our R&D center in Boston opened five years ago with one person. Today more than 200 software engineers work there," says Schmidt.

The Grenoble center's growth will depend entirely on how successful Sun is in recruiting qualified people. "Experienced network specialists are the most difficult people in the world to find," admits Schmidt.

Even with the combination of local R&D in Grenoble, local manufacturing in Scotland, and better customer service, it remains to be seen whether McNealy's plans for domination in Europe will work. If they don't then McNealy has an easy out: The local strategy in Europe, says McNealy, can't be separated from Sun's global strategy. "I don't want Europe to be stand-alone. I want the globe to be stand-alone." □

Jean Magarl in Paris contributed to this report

A clash of cultures at Tylan General

Offshore acquisitions bring new markets, higher sales —and sometimes people who just don't see eye-to-eye

BY H. GARRETT DeYOUNG

Most experts will tell you that an offshore acquisition is one of the most painless ways for a U.S. company to break into the European market. But David Ferran, president and CEO of Tylan General Inc. in San Diego, warns not to believe it for a minute, not unless you are convinced that both companies share the same vision of the future. It is also important, he adds, to anticipate the dozens of sometimes seemingly insignificant differences that will occur in how day-to-day business is conducted between the newly structured organization and the parent company.

Tylan General is a good example of what can happen when U.S. executives ignore those differences. It has been just about a year now since San Diego's Vacuum General Inc., a producer of pressure-control devices for semiconductor equipment manufacturers, acquired Tylan Corp., then a 30-year-old manufacturer of mass gas-flow systems in Torrance, Calif. The $22 million purchase was financed through a combination of venture capital and bank financing. The acquisition gave Vacuum General not only a new name—Tylan General Inc.—but also a foot in the European semiconductor-equipment market, thanks to Tylan's subsidiaries in Germany, France, and the United Kingdom.

So what is the problem? Put simply, the problem is people. More specifically, it is the suspicion, resentment, and just plain fear that arises when two or more business philosophies clash in the context of a corporate marriage. "We underestimated the cultural and communications problems that came with the acquisition," says Ferran. "It has been very frustrating. There needs to be a lot of mutual trust and respect if each country manager is to do his or her best job." While Ferran doesn't say so explicitly, one senses that those qualities are in short supply right now on both sides of the Atlantic.

If unresolved, the tensions of the past year threaten to torpedo the parent company's otherwise sound European game plan. Some of the problems are on view at Tylan General GmbH. Located in Eching, Germany—a cozy little town about 20 miles north of Munich—the unit's 24 employees account for roughly $5.5 million a year in revenue, or about 16% of the parent company's total sales. The site serves the semiconductor industries in Scandinavia, Austria, Switzerland, and The Netherlands, explains managing director Kurt Henche, and it is developing new applications in biology, food

processing, and medical technology.

Located in the heart of Bavaria's high-tech corridor, the Eching unit seems well-positioned to reap the benefits of Germany's electronics sector—without a doubt the healthiest, most lucrative in all of Europe. One advantage to doing business in Germany—especially the southern part of Germany—according to Henche, is that German customers demand high quality, good technical support, and reliable delivery, and they are more than happy to pay extra for those services. "The cheapest bid doesn't always get the order," says Henche. Another plus is the proximity to Germany's expertise in automation—the result, according to Henche, of the country's need to deal with the influx of unskilled workers who remained after World War II.

Unemployment runs only about 4% in the Munich area (versus 6% to 7% nationwide), and Henche bubbles over about the local work environment: excellent infrastructure, relatively low inflation rate, and a superb workforce. As for the nation's high wages, Henche shrugs and says, "You can hire people somewhere else for much less." But because of Germany's high productivity rate—among the highest in Europe—"you may need twice as many of them," he says.

The area's business climate is remarkably stable, in part because of the nation's tough worker-protection laws. Since it is difficult to fire people, says Henche, it is also difficult to make room for new people, unless the company is growing rapidly enough to justify creating new positions. The Germans also exhibit a strong preference for long-term relationships. "But the result is that you are working with the same [customers] for years," he says. "If you screw someone, they remember."

The main struggle, according to Ferran, is that Tylan's three European subsidiaries have been run more or less autonomously (not especially surprising, perhaps, in view of the technical and marketing differences between the various markets). One unit concentrated mostly on profits, another on customer service, and the third on new technology. "It was very entrepreneurial," says Ferran. "Each operation was basically a clone of the guy who was running it."

Tylan General Europe at a glance

Fiscal year	1989 ($ millions)	1989 (% of total)	1988 ($ millions)	1988 (% of total)
Net revenue	$12.3	33.3%	$12.2	49.2%
Operating income	1.1	34.3%	0.9	23.0%
Identifiable assets	6.6	28.5%	6.0	47.6%
Number of employees	54	20.5%	42	16.8%

Source: Company reports

What San Diego's top management wants—and have yet to achieve—is more aggressive sales, higher profits across the board, and decentralized execution of Tylan General's centralized planning. "Sometimes we talk with the manager and think that they have bought in," says Ferran. "Then we learn later that it isn't happening. Maybe it is poor communication, or maybe they don't want to understand."

The main dilemma is that Tylan's three European subsidiaries had been run more or less autonomously

The situation is complicated even further by the fact that Tylan Corp. had been courted by many companies before the acquisition. "The European managers were very stressed, and some of that stress was passed along to the employees," recalls Ferran. Nor was the stress relieved after the acquisition, when the entire top management in San Diego was replaced, he says. "The European managers were wondering what the crazy Americans were going to do next."

Henche agrees with Ferran's assessment of the communications gap. "It takes time for the two cultures to get to know each other," he says. But he also notes that many of the problems are due to management's misunderstanding of how cultural and national differences can show up on the bottom line. While the U.S. parent company deals mostly with large OEMs, for example, the German subsidiary focuses primarily on end users and is accustomed to dealing with smaller profit margins than in the United States. And like most European companies, he adds, Tylan GmbH offers its employees a potpourri of benefits and considerations—such as generously subsidized cafeterias, sporting activities, and liberal vacation policies—that most U.S. companies might find excessive. "It is hard to fire people here, so you have to work very hard to keep them motivated," according to Henche.

Ferran is now determined to "clean up some of the mess," as he puts it, by working to establish trust with the Europeans while still pursuing Vacuum General's goals of growth, profitability, and debt retirement. Meanwhile, with the benefit of hindsight, he concedes that many of the problems could have been avoided by concentrating more on people and perhaps a bit less on profits. "I wish I had spent more time with the operating managers and their families," Ferran says, almost wistfully. "At least we would have gotten to know each other better, and it probably would have saved everyone a lot of time and money." □

In Germany, "You work with the same customers for years," says Kurt Henche of Tylan General GmbH. "If you screw someone, they remember"

Finding the right distributor

There are plenty of mistakes that can be made in Europe. Here is a guide to distribution dos and don'ts

BY BARBARA N. BERKMAN

Last March, Rich Maxwell arrived in Paris to set up a European distribution network for Stallion Technologies Inc., an Australian maker of add-on cards for Unix-based personal computers. The problem, he says, was that Stallion's existing distributors "had not been managed very well from Australia."

But since then, Stallion's fortunes haven't improved much. "Germany is a problem for us because we are late to the market. The distributors are already filled with competitors' lines, and it is difficult to get them to change," reports Maxwell. The situation in Italy isn't much better, he says. "I have been talking to one company for over a year. It is very frustrating."

Stallion is not alone. Small companies that have plunged into Europe without the financial muscle to establish direct-sales offices find setting up a distribution network hard work. The distributor's location, size, and ability to handle technical products can spell distribution success or failure. In addition to that, "Europe is a long way away, and you are doing business in different languages," says Gary Kibblewhite of Europartner Consultants in London.

But by following the advice of those familiar with the European market, U.S. companies can avoid many common pitfalls.

Unlike a U.S. distributor, a distributor in Europe is a local company that stocks the product and handles design-in, marketing, advertising, trade shows, after-sales support, customer service, and order taking. They serve small markets, which makes them self-supporting and better equipped for technical support. The most common partner for a small to midsize U.S. manufacturer is a distributor who imports as well. "That implies familiarity with the physical passing of goods through customs and with international methods of payment and currency fluctuation," notes Charlie Thayer of European Marketing in Chevenoz, France.

An agent is basically the equivalent of a sales representative and is the unique source of product for all of Europe. The agent has a network of distributors and serves the OEMs directly.

A European representative is an organization that works only with distributors and agents and has no direct customers. The rep works on a commission basis and arranges contracts directly with the manufacturer.

U.S. companies traditionally lower export costs by shipping to their own facility in Europe or by appointing an agent to distribute the shipment. That can shave about 25% off the cost of transporting products to individual distributors.

Satellite distribution hubs have their drawbacks, as Osicom Technologies (U.K.) Ltd. discovered when its French hub failed. "We didn't have enough local expertise. A strong local distributor works much better," advises Michael Connolly, marketing manager of the Cardiff, Wales, subsidiary of the U.S. computer-systems maker.

An alternative to distributors and agents is a company that arranges for the physical movement of goods from manufacturer to customer. Among them is Van Ommeren-Intexo of The Netherlands, which specializes in electronics for companies such as disk-drive maker Quantum Corp. The company invoices customers on the manufacturer's stationery, uses EDI, and provides office space for the manufacturer and a multilingual staff to take sales orders.

Such companies are an intermediate step to testing European waters, which can be pretty choppy. Some distributors, for example, will accept your product line just to keep it off the market. "It is a delay tactic. They know a U.S. company will give them at least a year in Europe because the design-in cycle is so long," warns

Comparing European distributors

Averages for each country's electronics distribution industry (1989)

	U.K.	France	Germany	Italy	U.S.
Expenses (as % of sales)	20	22	19	8	17
Salaries (as % of total costs)	45	70	60	8	60
Sales per employee ($ thousands)	270	275	300	360	350
Receivables (days)	70	110	30	140	50
Vacation days per employee	27	25	30	31	10-15

Source: Europartner Consultants

David Sherwood, managing director of Applied Materials & Technology, a European marketing and management service in Bristol, England.

A U.S. company will send someone over to Europe to visit key OEMs only to return to Europe three months later to find their lead is eaten away by a local. "Americans will do a whistle-stop tour of Europe with a suitcase full of faxes they have received from European distributors, and they will interview them in the hotel lobby," says AMT's Sherwood. "They could have had the same conversation on the telephone."

Instead you should be looking at their financial resources, making sure they have the technical experience, visiting their customers, and looking to see if the product manager's role is well-defined, because the product manager is the one that sells the product to the sales force.

Some experts say an even better plan is to hire a local or an American with European experience to do the job. "If they are really serious about setting up in Europe, my advice is to send someone over from the States who is experienced in European marketing and who can appreciate the customs here. It is very, very difficult to find those people, which is why companies use consultants who know Europe but don't know your product," says Fred Henley, managing director of Transtel Communications Ltd., the European sales and support arm of holding company J. W. P. Inc. in New York.

To be sure, many smaller U.S. companies are scurrying to Europe themselves to attempt to wed their products with the perfect distributor. But they soon realize that the ideal mate isn't easy to find.

U.S. companies must understand that regional and national differences exist among European distributors. In Italy, for example, receivables run to 140 days, compared with 30 days in Germany. And Italian chip customers—unlike the British customer—tend to shop around.

Some experts argue the need for two regional distributors, particularly in the north and south of Italy and Germany. Others say regional distribution is gradually disappearing.

"Business in Italy is much too concentrated to warrant a north-south divide," according to Silvio Baronchelli, chairman of Italy's National Association of Electronic Distribution. He estimates that the area south of Rome accounts for less than 10% of the total market; that the Milan region accounts for 40%; and that the corridor of Turin, Venice, and Bologna accounts for another 35%.

U.S. companies also can choose among the pan-European networks cropping up all over Europe. Many of the major suppliers prefer to be with pan-European distributors, particularly when their reason for handing the business over to distributors is to cut their cost of sales, points out Gary Ranallo, managing director of Arrow Electronics (UK) Ltd.

Opponents of pan-European sourcing say fluctuations in exchange rates make it too risky. "Don't allow yourself to be dragged into cross-border franchises. You have got to look at each franchise as a separate company," advises Sherwood.

U.S. companies also underestimate the amount of support European distributors need—especially since European customers won't wait patiently until the start of the U.S. business day for the answer to a question.

Europe's large distributors have good technical support capability but often won't bother with new products that take a long time to design in. "You have so many start-ups that come here. Their products are so new, people are not eager to talk to them," says Giorgio Ghezzi, president of Italy's largest chip distributor, Silverstar SpA.

But smaller distributors often lack the financial and technical muscle necessary to market highly technical U.S. electronics products in Europe. Mips Computer Systems Inc. has worked hard to educate the European market about Unix products, explains Stratton Sclavos, acting general manager for Europe. "There are not a lot of good distribution channels for Unix and larger systems."

The problem is a common one. Iomega Corp. is the European subsidiary of the U.S. maker of a removable, crashless disk-storage device. "Our product is not a commodity product. In penetrating European markets it is a continual exercise to educate the customer, dedicated dealers, and our distributors," says Mason Herzog, director of European sales of Iomega's European subsidiary in Brussels.

Daniel Roberts was stymied when he tried to find distributors in France and Germany for the $130,000 laser-printer subsystems manufactured by Advanced Technologies Inc. of Milpitas, Calif. There were a number of small aggressive companies in Germany but none that could handle that complex a product. "We instead went to marketing agents, and we will support them directly," says Roberts, president of Opportunity Europe Ltd. in London. France, too, was a problem. "The smaller companies don't have the technical caliber to support those products."

If things do go sour, remember that an agent is almost impossible to fire in certain European countries unless the employer assumes responsibility for severance pay and about one year's lost commissions. European courts usually side with the employee. One American manufacturer protected himself by negotiating—with a handshake—a trial period before a contract was signed. □

What to ask a distributor

1. Do you sell a complementary product line with the same applications?
2. Do you have at least 10 employees?
3. Do you have good bank and trade references?
4. Does the U.S. commercial office have information on you?
5. What do the country's customers think are the most important features and benefits of your products?

Smaller distributors lack financial and technical muscle necessary to market electronics products in Europe

To learn more about the New Europe

ELECTRONIC BUSINESS's guide to resources for doing business abroad

BY ELAINE M. CUMMINGS

Ready or not, the global economy is here. And although it may be several years before we see a truly integrated Europe, analysts say now is the time for U.S. companies to stake out their positions.

Once you've made the decision to expand your business overseas, the next obvious question is where? Should you think about exporting, distributing, or franchising? Should you consider a joint venture or go it alone? How do you stay informed on new regulations or standards that may affect products, markets, and your ability to compete?

Many agencies, networks, and books can help answer these and other questions. Here is ELECTRONIC BUSINESS's road map to some of the best resources we found for companies who are looking to move into the New Europe.

GOVERNMENT AGENCIES

The best place to start is with the government. Local, federal, and foreign agencies have many branches set up to address particular needs, and many offer a variety of free services.

U.S. Department of Commerce
International Trade Administration
14th St. and Constitution Ave. N.W.
Washington, DC 20230
(202) 377-2000

U.S. and Foreign Commercial Service (US&FCS) for companies building export businesses
(202) 783-3238

The Single Internal Market Information Service for info on directives, amendments, and updates and a quarterly newsletter
(202) 377-5276

Eastern Europe Business Info Center
(202) 377-2645

Office for Information Technology, Instrumentation, and Electronics
(202) 377-4466

Exporter Counseling Division
(202) 377-4811

National Institute of Standards and Technology for foreign and international voluntary standards, government regulations, rules of certification, and General Agreement on Tariffs and Trade (GATT)
(301) 975-4038

GATT hotline (301) 975-4041

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European country desk officers, the ITA's International Economic Policy unit, are excellent sources of information on trade potential in specific countries.

Belgium/Lux: (202) 377-5401
Britain: (202) 377-3748
Denmark: (202) 377-3254
France: (202) 377-8008
Germany: (202) 377-2434
Greece: (202) 377-3945
Ireland: (202) 377-2177
Italy: (202) 377-2177
Netherlands: (202) 377-5401
Portugal: (202) 377-3945
Spain: (202) 377-4508
Sweden: (202) 377-4414
Western Europe: (202) 377-5341
Eastern Europe: (202) 377-2645
EC: (202) 377-5276

♦

Department of Commerce industry specialists:

Electronic Legislation:
(202) 377-0507

Electronic Components:
(202) 377-8411

Electronic Components: Production and Test Equipment: (202) 377-5014

Electronic Database Services: (202) 377-5820

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U.S. Int'l. Trade Commission
Washington, DC 20436
for issues related to trade administration, trade programs, and export policies
(202) 252-1807

continued

Delegation of the EC
2100 M St. N.W., 7th Floor
Washington, DC 20037
Contact: Ella Krucoff
(202) 862-9500

U.S. Dept. of State/Europe Regional
Political & Economic Affairs
Washington, DC 20520
Contact: Michael Brownrigg
(202) 647-2395

♦

U.S. Embassies in European countries are also a valuable source:

Belgium: 27 Boulevard du Regent
B-1000 Brussels
or APO NY 09667-1000
(32) 2-513 38 30

Britain: 24/31 Grosvenor Square
W1A 1AE London
or Box 40 FPO NY 09509
(44) 71-499 9000

Denmark: Dag Hammarskjold
Alle 24
2100 Copenhagen or APO NY 09170
(45) 1-42 31 44

France: 2, avenue Gabriel
75382 Paris, Cedex 08
or APO NY 09777
(33) 14-2 96 12 02

Germany: Deichmanns Ave.
5300 Bonn 2 or APO NY 09080
(49) 228-3391

Finland: Itainen Puistotie 14A
SF-00140 or APO NY 09664
(358) 0-17 19 31

Greece: 91 Vasilissis Sophias Blvd.
10160 Athens
or APO NY 09255-0006
(30) 1-721 84 01

Hungary: V. Szabadsag Ter 12
American Embassy, APO NY 09213
(36) 1-112 64 50

Ireland: 42 Elgin Road
Ballsbridge
(353) 1-68 71 22

Italy: Via Veneto 119/A
00187 Rome or APO NY 09794
(39) 6-46 741

Netherlands: Lange Voorhout 102 or
APO New York 09159
(31) 70-362 49 11

Norway: Drammensveien 18
0244 Oslo 2 or APO NY 09085
(47) 2-44 85 50

Poland: Aleje Ujazdowskle
29/31 Warsaw
(48) 22-28 30 41 9

Portugal: Avenida das Forcas Armadas 1600 Lisbon
or APO NY 09678-0002
(351) 1-726 66 00

Spain: Serrano 75 28006
Madrid or APO NY 09285
(34) 1-577 40 00

Sweden: Strandvagen 101
S-115 27 Stockholm
(46) 8-783 53 00

Switzerland: Jubilaeumstrasse 93
3005 Bern
(41) 31-437 011

♦

Office of International Trade
U.S. Small Business Administration
1441 L St. N.W.
Washington, DC 20416
(202) 653-7794

U.S.Trade Representative for
Europe/Mediterranean
600 17th St. N.W.
Washington, DC 20506
(202) 395-3320

U.S. Trade and Dev. Program
Room 309 SA-16
Washington, DC 20523-1602
(703) 875-4331

Office of the U.S.
Trade Representative
600 17th St. N.W., Room 100
Washington, DC 20506
(202) 395-6120

PRIVATE ORGANIZATIONS

Beyond government agencies, private organizations also offer plenty of advice, often at no charge.

U.S. Chamber of Commerce
International Division
1615 H St. N.W.
Washington, DC 20062
(202) 463-5469

Or the overseas offices of the U.S. Chambers of Commerce are another source:

Belgium: Ave. des Arts 50, Boite 5
B-1040, Brussels
(32) 2-51367709; fax (32) 2-5137928

Britain: 75 Brook St.
London WIY 2EB
(44) 1-14930381; fax (44) 1-4932394

France: 21, ave. George V
F-75008 Paris
(33) 14-7 23 70 28

Germany: Rossmarkt 12,
Postfach 100 162
D-6000 Frankfurt/Main 1
(49) 69-28 34 01; fax (49) 69-28 56 32

Greece: 16 Kanari St.
3rd Floor
Athens 106 74
(1) 36-18 385; fax (1) 36-10 170

Ireland: 20 College Green
Dublin 2
(353) 1-79 37 33

Italy: Via Cantu 1
20123 Milano
(39) 2-869 0661

Netherlands: Carnegieplein 5
2517 KJ The Hague
(31) 20-5187518; fax (31) 20-151424

Portugal: Rua De D. Estefania,
155, 5 ESQ
Lisbon 1000
(351) 1-57 25 61

Spain: Adva. Diagonal 477
08036 Barcelona
(34) 3-321 81 95; fax (34) 3-321 81 97

Switzerland: Talacker 41
8001 Zurich
(41) 1-211 24 54

American National Standards
Institute 1430 Broadway
New York, NY 10018
(212) 354-3300; fax (212) 398-0023
for information on standards, testing, and certification

American Electronics Association
1225 Eye St. N.W., Suite 950
Washington, DC 20005
Contact: Brian Wynne
(202) 682-9110

Electronic Industries Association
International Business Council
2001 Pennsylvania Ave.
Washington, DC 20003
Contact: Kevin Shannon
(202) 457-4900

International Strategies Inc.
260 Franklin St., Suite 1700
Boston, MA 02110
(800) USA-XPORT (in Mass.)

Harvard Translations Inc.
17 Arlington St.
Boston, MA 02116
Newsletter: MarketScan Europe
(617) 424-9291

continued

FOREIGN GOVERNMENT AGENCIES

Many European agencies support U.S. investment in the country and in some cases offer such benefits as tax breaks, employee-training assistance, and cash grants.

Britain: Scottish Dev. Agency
One Landmark Square, Suite 810
Stamford, CT 06901
(800) 843-7268

France: French Industrial Development Agency
610 Fifth Ave., Suite 301
New York, NY 10020
(212) 757-9340

France: U.S. Representative for Normandy
3790 El Camino Real 281
Palo Alto, CA 94306
(415) 855-9412; fax (415) 855-9459

France: Rouen Chamber of Commerce and Industry
Palais des Consuls
Quai de la Bourse
76000, Rouen
(1) 33-35 14 37 27

Germany: Baden Wuertemberg
143 Bedford Rd.
Katonah, NY 10536
(914) 232-1188

The Netherlands:
The Netherlands Foreign Investment Agency
1 Rockefeller Plaza
New York, NY 10020
(212) 246-1434

SMALL BUSINESS FEDERATIONS

These agencies are eager to work with small businesses who are thinking of expanding overseas.

Belgium: Federation des Enterprises de Belgique
rue Ravenstein 4
Brussels 1000
(32) 2-511 5880

Britain: National Federation of Self-employed and Small Businesses Ltd.
140 Lower Marsh
Westminster Brg., London SE1 78E
(44) 1-928 9272

Denmark: Federation of Danish Industries
H.C. Andersens Blvd. 18
DK-1596 Copenhagen V
(45) 1-15 22 33

France: Confederation Generale des Petities et Moyennes Enterprises
1, ave. du General de Gaulle, Terrace Bellini 92806 Putaux CEDEX
(33) 1-47 78 16 38

Germany: Bundesverband der Selbstanigen E. V. Deutscher Gewerbeverband, Coburgerstrasse 1a
D-5300 Bonn 1
(49) 228-23 20 26 28

Greece: Hellenic Organization for Midsize Industries & Handicrafts
150 E. 58th St., 10th Fl.
New York, NY 10022
(212) 371-1425

Ireland: Small Firms Association
Confederation of Irish Industry
Kildare St. Dublin 2
(353) 1-77 98 01

Italy: Confederazione Nazionale dell'Artigianato
Via S. Prassede 24 00184 Rome
(39) 6-47 496 1

Luxembourg: Chamber of Commerce
7, rue Alcide de Gaspari
Luxembourg 2981
(352) 43-58 53

Netherlands:
Coordinating Institute of Small and Midsize Companies
P.O. Box 112
1110 AC Diemen
(31) 20-90 10 71

Portugal: Camara de Comercio e Industria Portugesa
Rua das Portas de Santo Antao, 89
1194 Lisbon
(351) 1-32 179

Spain: Instituto de la Pequena y Medician Empresa
Paseo Castellana 141
28046 Madrid
(34) 1-450 80 48

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ACCOUNTING FIRMS

The international divisions of the Big Six accounting firms offer free brochures, surveys, newsletters, database access, and professional advice.

KPMG Peat Marwick
Europe/USSR Center
767 5th Avenue, 47th Floor
New York, NY 10153
Contact: Stephen Harlan
(212) 909-5596

Ernst and Young
International Business Services
787 7th Avenue
New York, NY 10019
Contact: Jean-Claude Goldenstein
(212) 773-5992

Price Waterhouse
South Wark Towers
32 London Bridge St.
London SE1 9SY
Contact: Bruce Edwards
(44) 71 939 3000

Arthur Andersen and Co.
European Business Program/U.S.
1345 Avenue of the Americas
New York, NY 10105
Contact: Frank Schwitter
(212)708-4113; fax(212)708-3630

Arthur Andersen and Co.
Avenue des Arts, 56
B-1040 Brussels, Belgium
Contact: Iain Stitt
(32) 2-5104307; fax (32) 2-5104308

Coopers & Lybrand
International Operations Dept.
1251 Avenue of the Americas
New York, NY 10020
Contact: Wieland Chong
(212) 536-2770

Delloite Touche
DRTES avenue des Arts, 27
B-1040 Brussels, Belgium
Contact: Jean-Claude Brauda
(32) 2-230 5980; fax (32) 2-230 5878

TRADE EVENTS

The U.S. Department of Commerce "Matchmaker" delegations, along with the private trade shows, will put you in touch with European agents.

Matchmaker Trade Delegation
in Amsterdam and Brussels
June 10-14, 1991
Theme: Telecommunications, lasers, and fiber optics
(202) 377-3119

Matchmaker Trade Delegation
in Zurich and Vienna
June 20-25, 1991
Theme: Process control, analytical and scientific instruments
(202) 377-0106

Matchmaker Trade Delegation
in Stockholm and Hamburg
Sept. 23-27, 1991
Theme: Environmental control equipment, lab and scientific equipment
(202) 377-8970

continued

The October 15, 1990 issue of Electronic Business is devoted entirely to the Malcolm Baldrige National Quality Award and the management of quality. Use it to plan your own award application or as a benchmark to measure where your company stands in regard to quality. Special sections include Training for Quality, International Quality, Report on Customer Satisfaction, and Quality Strategies and Resources.

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Matchmaker Trade Delegation in Milan and Athens
Sept. 30 - Oct. 4, 1991
Theme: Telecommunications, computers, peripherals, and software
(202) 377-0584

CeBIT '91/NetWorld Europe in Hannover, Germany Theme: Office, Information and Telecommunications Technology
March 13 - 20, 1991
(609) 987-1202

IFSEC Trade Fair in London Theme: Electronic security equipment
April 1, 1991
(202) 377-8410

COMPONIC International Exhibition in Paris
Theme: Electronic Components
Nov. 18 - 22, 1991
(33) 1-49 09 64 40

PRONIC International Exhibition in Paris
Theme: Electronic Equipment and Products Nov. 12 - 16, 1991
(33) 1-49 09 64 40

BOOKS, MAGAZINES, AND ARTICLES

The 1992 Challenge from Europe: Development of the European Community's Internal Market. Michael Calingaert (Nat'l Planning Assoc., Washington, D.C., 1988)
[*To order phone* (202) 265-7685]

1992: The EC's Internal Market Program, Manufacturer's Alliance for Productivity and Innovation. (Washington, D.C., 1990)

Exportize. (Small Bus. Foundation of America, Boston, 1990 3rd ed.)
[*To order phone (617) 350-5096*]

The World's Largest Market: A Business Guide to 1991. (Amacom; New York, 1990)

The Marketing Challenge of Europe 1992. John A. Quelch, Robert D. Buzzell, Eric R. Salama (Addison-Wesley; Boston, 1991, 2nd ed.)

Marketing Moves through EC Crossroads. John A. Quelch and Robert D. Buzzell (Sloan Management Review; Cambridge, fall 1989, pp. 63-74)

The World is Your Market: An Export Guide for Small Business. Clark C. Cassell (Braddock Communications; Washington, D.C., 1990)

Times of London's Guide to 1992. Richard Owen and Michael Dynes (Times Books; London, 1989)

Guide to Eastern Europe: The Changing Time of the Warsaw Pact. (Times Books; London, 1990)

High Tech 1992: The Impact of the Single European Market on High-Technology Businesses. (Graham and Trotman Ltd.; London, 1989)

"Facing the Fortress: Preparing for Europe After 1992." Sherry Buchanan (ELECTRONIC BUSINESS, Oct. 15, 1988)

"Go East, Young Man." Frank H. Jellinek (*Inc.* magazine, Sept. 1990)

"Selling Abroad: Learning the Ropes." H. Garrett DeYoung (*Inc.* magazine, Aug. 1988)

"Giving Direction to the Single Market." (*Financial Times*, London, Oct. 22, 1990)

"Eastern European Consumers Hunger for Electronics Products." (ELECTRONIC BUSINESS *Forecast*, Oct. 8, 1990)

"European Community: The Single Market Takes Shape." (*Business America* magazine, U.S. Department of Commerce, Washington, D.C., Jan. 15, 1990)

"Export Now: It Makes Good Business Sense." (*Business America* magazine, U.S. Department of Commerce, Washington, D.C., Jan. 15, 1990) □

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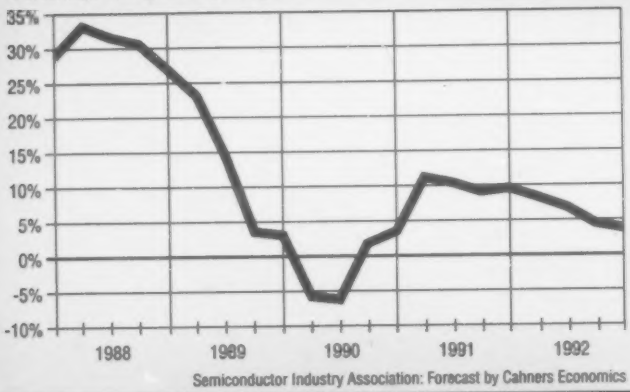
Semiconductor sales to United States

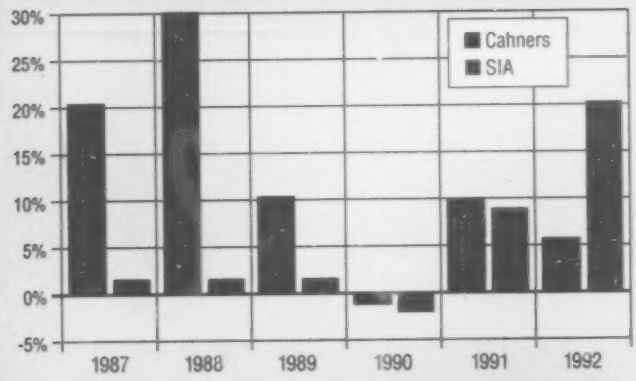
Percentage change from year ago



Semiconductor Industry Association: Forecast by Cahners Economics

Us vs. them

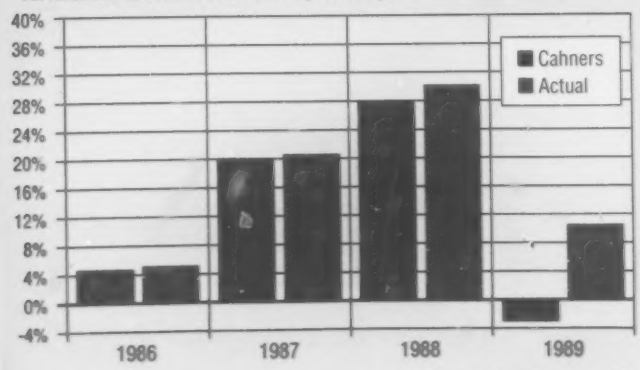
Semiconductor sales, annual percentage change



Semiconductor Industry Association: Forecast by Cahners Economics

Cahners forecast track record

All forecasts are made in the fall of previous year



Source: Cahners Economics, SIA

Semiconductor sales surprisingly strong

Recent data suggests the semiconductor slump is indeed over. New orders for semiconductors came in much stronger than we predicted three months ago in this column. Prior to the invasion of Kuwait, Cahners Economics expected semiconductor orders to rise 7% in the third quarter of 1990. As with other forecasters, economic uncertainty got the best of us, leading us to lower our forecast to only a 2% gain in the third quarter. The Semiconductor Industry Association (SIA) recently revealed that new orders actually swelled 8% to $3.62 billion in the third quarter compared with the year-ago level. The last time orders reached this high level was in the first quarter of 1989.

Semiconductor sales also saw stronger-than-expected growth in the third quarter of 1990. Sales inched up 2.1% to $3.75 billion, on the heels of two consecutive quarterly declines earlier this year. Because third-quarter data also came in stronger than anticipated, we raised our forecasts for both this year and next. Semiconductor sales are now forecast to dip only 1.3% this year and then rise 10% in 1991 and 5.8% in 1992. New orders will push up 4.8% this year, 14.4% in 1991, and 2.6% in 1992.

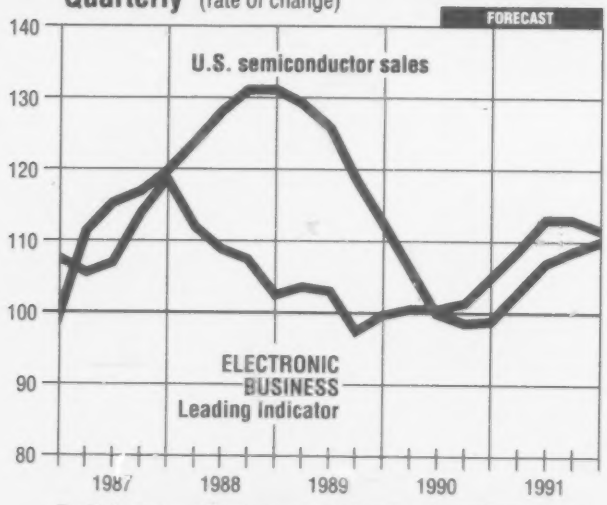
Our forecasting methodology relies on picking out the peaks and troughs of the next business cycle. Leading economic indicators like the ELECTRONIC BUSINESS Leading Indicator suggest business cycles in the 1990s will be shorter and milder, both in the general economy and for the semiconductor industry. While Cahners does consider new-product development in our forecasts, many experts such as the SIA tend to rely more on product innovation such as high-definition television to drive up chip sales.

Even so, the SIA and Cahners Economics expect similar growth trends in the semiconductor industry in 1990 and in 1991. Built into the SIA's forecast of 20.5% sales growth in 1992 is the assumption that the general economy will continue to accelerate through the end of 1992 with GNP rising 4%. Cahners Economics holds firm that the industry will see slower growth in 1992 compared with 1991. GNP is forecast to see a mild upturn in the first half of 1991 with growth accelerating through the end of next year. Expect GNP to rise 1.9% in 1991 and post a 2.9% gain by the end of 1992.

JULIE HANDELMAN

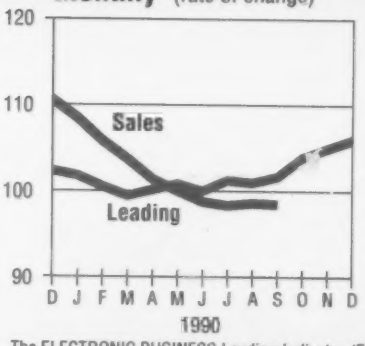
ELECTRONIC BUSINESS Leading Indicator

Quarterly (rate of change)



To obtain your complimentary copy of a 12-page background paper on the ELECTRONIC BUSINESS Leading Indicator, please contact Linda Keehn at Cahners Publishing Co., 275 Washington St., Newton, MA 02158-1630, USA, telephone (617) 630-2119, fax (617) 630-2100.

Monthly (rate of change)



The ELECTRONIC BUSINESS Leading Indicator (EBLI) finally broke the 101 barrier in September, recording its highest level, 101.6, since January. Although this is a weak rise, it is still significant in that it occurred in the post-Gulf crisis economy. However, the signals are mixed. The Gulf crisis has taken its toll on the semiconductor stock-price index, dropping from 78.2 in July to 64.1 in August and, finally, [illegible] September. But the semiconductor book-to-bill ratios are on the rise, giving a good basis for the expected expansion of the EBLI. The next peak is still forecast to occur in June of 1991 at a level of 114.

Source: Cahners Economics

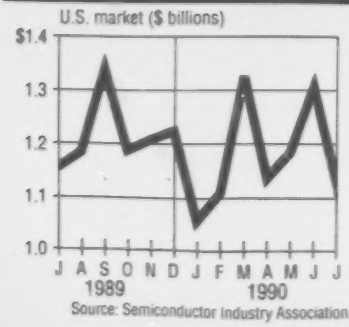
Electronics industry indicators this month

	Latest month	Previous month	Year ago	1989 average
ELECTRONIC BUSINESS Leading Indicator (rate of change, Sept.)	101.6	100.9	96.3	100.9
U.S semiconductor bookings ($ millions, 3-month average, Sept.)	$1,207	$1,238	$1,113	$1,205
Weekly hours of semiconductor production workers (monthly average, Aug.)	39.4	39.4	39.7	40.1
Electronic component lead time index (1977=100, Oct.)	64.0	80.6	75.4	102.5
S&P's semiconductor stock price index (1970=10, monthly average, Sept.)	56.7	64.1	57.5	54.7
Change in electronic-components inventories ($ millions, SA, Aug.)	-$201	+$187	+$90	-$12.8
Contracts and orders for plant and equipment ($ billions, SA, Aug.)	$38.9	$43.4	$41.7	$43.4

SA = seasonally adjusted, all other data are not seasonally adjusted

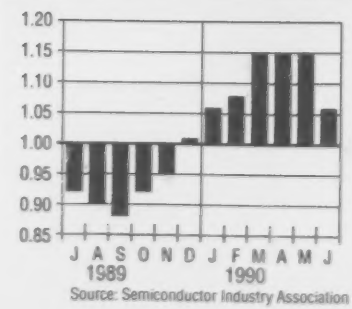
Sources: Semiconductor Industry Association, U.S. Bureau of Labor Statistics, *Electronics Purchasing* magazine, Standard & Poor's, U.S. Commerce Department, U.S. Bureau of Economic Analysis

Semiconductor sales



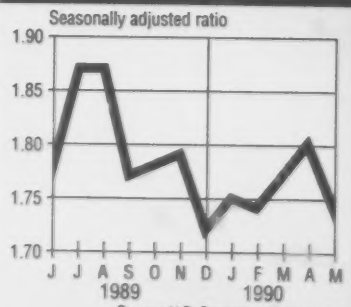
Source: Semiconductor Industry Association

Semiconductor book-to-bill ratio



Source: Semiconductor Industry Association

Component inventory-to-shipments



Source: U.S. Commerce Department